Université de Montréal

Les déterminants biopsychosociaux de la réadaptation de travailleurs accidentés du travail

par

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Les déterminants biopsychosociaux de la réadaptation de travailleurs accidentés du travail

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Résumé

Malgré des années de recherches sur la douleur et les incapacités chroniques, peu de conclusions claires émergent quant aux facteurs de risque les plus pertinents. La majorité des auteurs s'entendent toutefois sur un fait, les troubles musculo-squelettiques et l'adaptation à leurs nombreuses conséquences est un processus complexe, multidimensionnel et déterminé par l'interaction de facteurs biopsychosociaux. Deux articles sont présentés avec comme objectifs généraux d'identifier les déterminants importants de l'ajustement à un trouble musculo-squelettique. Le premier article consiste en une recension des écrits systématique visant à résumer tous les facteurs pronostiques biopsychosociaux de l'ajustement multidimensionnel aux troubles musculo-squelettiques et examinant leur pertinence à déterminer ces divers indicateurs d'ajustement, principalement la participation au travail, les limitations fonctionnelles, la douleur, la qualité de la vie, la détresse psychologique et la rechute. Les 105 études prospectives recensées et correspondant aux critères d'inclusion et d'exclusion ont été analysés et chaque association significative a été résumée. Par la suite, 68 études qui ont inclus des facteurs sociodémographiques, biologiques, psychologiques et sociaux ont été analysées séparément. Leur qualité méthodologique a été évaluée, un niveau d'évidence a par la suite été établi pour chaque association entre les facteurs de risque et les diverses variables de résultats. Les divergences dans ces associations entre les différentes phases de chronicité ont également été identifiées. Un niveau d'évidence élevée a été découvert concernant le rôle des attentes de rétablissement, certaines pratiques de gestion intégrées de l'incapacité, les stratégies d'adaptation (coping), la somatisation, la comorbidité, la durée de l'épisode symptomatique et un niveau modéré d'évidence a été découvert pour les comportements de douleur. Lorsque vient le temps de prédire les divers indicateurs d'ajustement de sujets souffrant de troubles musculo-squelettiques, chacun tend à être associé à des facteurs de risque différents. Peu de différences ont été relevées lorsque les phases de chronicité ont été prises en compte. Ces résultats confirment la nature biopsychosociale de l'ajustement aux troubles musculo-squelettiques bien que les facteurs psychosociaux semblent être prédominants.

Le second article est une étude prospective avec un suivi de 2 et 8 mois. Elle a été menée auprès de 62 travailleurs accidentés, principalement en phase de chronicité et prestataires d'indemnités de revenu de la CSST (Commission en Santé et Sécurité du Travail du Québec). L'objectif de cette étude était d'identifier les déterminants de l'engagement actif dans un processus de retour a travail par opposition à l'incapacité chronique, tout en adoptant une approche biopsychosociale. Cet objectif a été poursuivi en faisant l'étude, d'une part, de la pertinence de facteurs de risque ayant déjà fait l'objet d'études mais pour lesquelles aucun consensus n'est atteint quant à leur utilité prédictive et d'autre part, de certains facteurs de risque négligés, voire, même omis de ce domaine de recherche. Suite à des analyses multivariées, le genre, les attentes de rétablissement en terme de capacité à retourner au travail et l'importance du travail ont été identifiés comme des déterminants de l'incapacité chronique liée au travail. Après 8 mois, l'âge, la consolidation médicale, les symptômes traumatiques, le support au travail et l'importance du travail ont été également identifiés comme des déterminants d'incapacité chronique liée au travail. Ces résultats démontrent l'importance d'aborder l'étude de l'incapacité chronique et de la réinsertion professionnelle selon une perspective multidimensionnelle. Ces résultats corroborent également les conclusions de notre recension des écrits, puisque les facteurs psychosociaux ont été identifiés comme étant des déterminants importants dans cette étude.

Mots-clés : troubles musculo-squelettiques, incapacité chronique, facteurs pronostiques, biopsychosociale, retour au travail, recension systématique, étude prospective.

Abstract

Despite years of research on chronic pain and disability, there is yet little consensus on a core set of risk factors. One thing that most agree on, is the fact that musculoskeletal disorders and the adjustment to its consequences is a complex, multidimensional process determined by biopsychosocial factors interacting with one another. Two articles are presented with the overall goal of identifying significant determinants of adjustment to musculoskeletal disorders. The first article is a systematic literature review that aimed at reviewing all pertinent biopsychosocial prognostic factors of adjustment to musculoskeletal disorders and assessed their relevance in predicting multidimensional outcomes, namely work participation, functional disability, pain, quality of life, psychological distress and recurrence. The 105 prospective studies identified and fitting the inclusion and exclusion criteria were analyzed and all significant associations were summarized. Then, 68 studies that included sociodemoraphic and biopsychosocial risk factors were separately analysed for their methodological quality, level of evidence (LOE) was established for each association between risk factors and outcome variables and existing differences were highlighted between phases of chronicity. Strong evidence was found for recovery expectations, coping, somatization, comorbidity, duration of episode, disability management and moderate evidence was found for pain behaviours. When it comes to predicting different outcomes reflecting the adjustment process of subjects with musculoskeletal disorders, each tends to have a different set of predictors. Few significant differences were found according to phases of chronicity. These results support the biopsychosocial nature of the adjustment to musculoskeletal disorders with a predominance of psychosocial determinants.

The second article is a prospective study with follow-ups at 2 and 8 months and was conducted on a sample of 62 mostly chronic occupationally injured workers receiving compensation benefits from the CSST (Quebec Workers' Compensation Board). The study aimed to identify determinants of active involvement in a return to work process while adopting a biopsychosocial approach. It did so by investigating the pertinence of previously studied risk factors but for which no consensus yet exists, but also by investigating the pertinence of previously neglected or even omitted risk factors. After multivariate analysis, gender, work recovery expectations and importance of work were predictive of work outcomes at 2 months. After 8 months, age, medical consolidation, trauma symptoms, work support and importance of work predicted work outcomes. The results show the importance of approaching chronic work disability from a multidimensional perspective, although corroborating our literature review's findings that psychosocial variables appear to be more significant predictors in this study.

Keywords: Musculoskeletal disorders, chronic disability, prognostic factors, biopsychosocial, work outcome, systematic review, prospective study.

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Liste des abréviations

En français

CSST :	Commission de la Santé et de la Sécurité du Travail du Québec
OMS :	Organisation Mondiale de la Santé
TMS :	Troubles Musculo-squelettiques

En Anglais

(HR)QOL :	(Health Related) Quality of Life
HQ:	High Quality
LBP:	Low Back Pain
LOE:	Level of evidence
LQ:	Low Quality
MQ:	Moderate Quality
MSD:	Musculoskeletal Disorders
PTSD:	Posttraumatic Stress Disorder
RTW:	Return to Work
WHO:	World Health Organization

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Introduction

1. Préambule

Compte tenu de l'importance de la problématique des troubles musculo-squelettiques et des multiples conséquences socio-économiques qui en découlent, cette thèse vise à identifier les principaux indicateurs d'adaptation de personnes aux prises avec un trouble musculo-squelettique. Pour ce faire, une recension systématique des écrits sera d'abord présentée afin d'identifier le niveau d'évidence des principaux déterminants examinés à ce jour. Par la suite, une étude empirique vise d'une part, à valider certains facteurs pronostiques identifiés dans la littérature et d'autre part à explorer le potentiel prédictif de facteurs pertinents ignorés.

Afin de mettre en contexte la pertinence de cette entreprise, nous allons dans un premier temps dresser un bref portrait de cette problématique et de ces impacts au niveau social et individuel dans la section 1 et 2. Par la suite, l'importance de la perte du lien d'emploi suite à un accident de travail sera discutée ainsi que l'aspect multidimensionnel de la douleur et l'incapacité chronique aux sections 3 et 4 respectivement. Un bref portrait de recensions des écrits récentes ainsi que leurs limites, sera ensuite discuté à la section 5 avant de présenter les objectifs de la présente thèse et le contenu des articles qui la compose à la section 6.

2. Prévalence des troubles musculo-squelettiques

Au cours des dernières décennies, la problématique des troubles musculo-squelettiques (TMS) et leurs conséquences a pris des proportions alarmantes, tant au niveau socio-économique qu'au plan humain. En effet, les données épidémiologiques démontrent l'importance de la prévalence de ces conditions à l'échelle planétaire, tant dans les pays développé qu'en voie de développement (1, 2). Wright & Gatchel (3) rapportent que chaque année, entre 3-4% de la population environ vit une situation d'incapacité temporaire découlant d'un trouble musculo-squelettique et 1% serait en invalidité permanente. Les coûts économiques directs (p. ex. système de santé, indemnités compensatoires) et indirects (p. ex. absence du travail, perte de productivité) sont astronomiques.

Bien que Waddell (4) rapporte qu'une certaine stabilisation du nombre de cas d'indemnité de revenu suite à un trouble musculo-squelettique est observé, il souligne toutefois que ce taux demeure très élevé. Ce ne sont pas tous les travailleurs victimes d'un accident de travail ou d'une maladie professionnelle qui s'absentent du travail ou encore réclament une indemnité. Ce taux est estimé à environ 25% (5). Au Québec plus spécifiquement, la prévalence de douleurs musculo-squelettiques restreignant les activités est évaluée à 45% et 47,3% respectivement pour les hommes et les femmes au sein de la population générale active au niveau du travail en 1998 (6). Cependant, les données de la Commission de la Santé et de la Sécurité du Travail (CSST) témoignent qu'environ 5,3% des travailleurs du Québec ont sollicité des indemnités de revenu suite à un accident de travail en 1997 (7).

Au Québec, comme aux États-Unis d'ailleurs, il est estimé qu'environ 40% des indemnités de travail découlent de TMS (8, 9, 10). De plus, les lésions musculo-squelettiques se retrouvent de façon disproportionnée au sein des services de réadaptation sociale et professionnelle[1] comparativement aux autres lésions indemnisées. De 2001 à 2002, elles représentaient environ 45,2% de tous les dossiers en réadaptation à la CSST (11). Parmi les individus souffrant de TMS, il est toutefois reconnu qu'une faible majorité des cas, estimée entre 3 et 10%, démontre des difficultés à se rétablir. Cependant, ils sont responsables de la majeure partie des coûts socioéconomiques (12, 13, 14, 15, 16). Constat important : la majorité des personnes qui manifestent des symptômes après 3 ou 4 mois,

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[1] L'objectif de la réadaptation est de faciliter la réintégration du travailleur sur le marché du travail, en éliminant ou en atténuant son incapacité physique et en l'aidant à surmonter les conséquences sur les plans personnel et social de sa lésion professionnelle (63).

sera toujours en incapacité après un an. Plus encore, la majorité de ces derniers le sera toujours après 2 ans (17).

3. Au-delà des coûts socio-économiques

Ces statistiques, bien que signifiantes en soi, ne traduisent pas les nombreuses conséquences physiques, psychologiques, sociales et économiques auxquelles doivent souvent faire face les travailleurs victimes d'une lésion professionnelle. En effet, au-delà de l'expérience de la douleur et des limitations fonctionnelles résultant d'une lésion physique, les travailleurs accidentés peuvent subir une cascade de pertes secondaires dans de multiples domaines de leur vie, tels que les relations interpersonnelles, les rôles familiaux et professionnels ainsi que financier (18, 19, 20). Par conséquent, les perturbations résultant de ces nombreuses pertes risquent fort de confronter l'image de soi de ces travailleurs accidentés à plusieurs niveaux et augmenter leurs incertitudes face à leur avenir (19, 21). La perte d'un emploi en soi représente une épreuve majeure dans la vie d'une personne et peut avoir des impacts négatifs tels que des complications de santé, la détresse psychologique, une plus faible estime de soi et la perte du réseau social (22). Ranjan (23) avance que les impacts multiples résultant de la perte d'emploi sont similaires aux impacts résultant d'affections chroniques. Lorsque des limitations fonctionnelles mènent à la perte d'emploi, ces conséquences sont souvent décuplés. L'expérience simultanée et combinée de ces deux événements peut déclencher de multiples facteurs de risque biopsychosociaux augmentant ainsi les risques d'invalidité chronique.

4. La perte du lien d'emploi

Polatin et al. (24) ont démontré que la disponibilité d'un emploi est un des prédicteurs majeurs du succès des démarches de réadaptation en particulier pour la réinsertion professionnelle. Toutefois, certains facteurs (par ex. le niveau des limitations fonctionnelles en lien avec les demandes physiques de l'emploi, les réactions de l'employeur à la lésion ou la demande d'indemnité de revenu, la taille de la compagnie rendant plus difficile la mise en place de stratégies de gestion intégrée des incapacités, etc.), peuvent compromettre le lien et le retour à l'emploi prélésionnel. Compte tenu des conséquences néfastes résultant d'une absence du travail prolongée, les services de réadaptation de la CSST ont instauré depuis 1993 une politique visant un retour au travail rapide chez l'employeur pré-lésionnel suite à un accident de travail (7). L'importance d'intervenir tôt auprès de cette population afin de prévenir l'incapacité chronique est largement reconnue. Les pratiques de « gestion intégrée des incapacités » telles que les retours progressifs au travail, les travaux légers ou les accommodations de poste ont mainte fois démontré leur efficacité (25, 26, 27). La participation des divers intervenants (employeur, professionnels de la santé, conseiller en réadaptation, etc.) est bien sûr essentielle au succès de ces démarches. Toutefois, comme le décrivent Baril et al. (7), il arrive que l'interaction entre les caractéristiques sociodémographiques des travailleurs accidentés, les caractéristiques des lésions encourues et les caractéristiques des compagnies ne permettent pas la mise en place de telles mesures. Comme le travail tient une place centrale dans la vie de la majorité des gens et sert à combler plusieurs besoins au plan personnel, social, économique et d'actualisation de soi (28, 29), la perte d'un emploi est également un événement significatif pouvant mener à de nombreuses conséquences négatives sur le bien-être de l'individu (29). Lorsque l'accident de travail mène à la perte du lien d'emploi, les effets concomitants de ces 2 événements augmentent les risques pour le travailleur accidenté de s'enliser dans la chronicité (30).

Pour tenter de donner du sens à ces perturbations, Schlossberg (31, 32) propose un modèle de transition, de plus en plus reconnu. Elle définit une transition comme tout événement (ou absence d'événement) ayant pour conséquences des changements au niveau des relations interpersonnelles, de la routine de vie, des croyances et des rôles dans les contextes occupationnel, familial, de la santé et personnel. Les événements imposés, inattendus et négatifs comme un accident de travail, constituent des transitions plus perturbantes et déstabilisantes. Les événements reliés à la santé sont considérés comme les transitions perçues les plus difficiles (32). Les travailleurs, victimes d'un accident de travail combiné à la perte du lien d'emploi, traversent souvent une période de transition remplie de multiples perturbations dans leur vie.

5. La douleur et l'incapacité, une expérience multidimensionnelle

Le retour au travail est généralement l'objectif ultime de la réadaptation sociale et professionnelle, particulièrement dans un contexte d'assurance où des travailleurs accidentés reçoivent une indemnité de revenu. En se focalisant uniquement sur le retour ponctuel au travail, l'expérience multidimensionnelle du processus de la perte du lien d'emploi liée à un accident de travail est souvent négligée voire, ignorée. Au delà et en deçà du retour au travail, Livneh (33) propose un modèle pluridimensionnel permettant de comprendre les multiples facettes de l'adaptation suite à un accident de travail et à l'incapacité chronique. L'évaluation de l'impact d'un tel événement est conçue sur trois niveaux de fonctionnement. L'évaluation du fonctionnement intrapersonnel se fait à partir d'indicateurs observables de santé et de l'expérience subjective de la condition physique tels que la douleur et les limitations fonctionnelles, ainsi que des indicateurs cognitifs, émotifs et comportementaux du bien-être psychologique tels que l'anxiété et la dépression. Pour sa part, le fonctionnement interpersonnel est évalué par des indices de l'adaptation au niveau des relations familiales, conjugales et professionnelles. Enfin, l'évaluation du fonctionnement extrapersonnel est fondée sur des indices de l'adaptation au niveau professionnel et de retour au travail. Évaluer et comprendre l'interaction de tous ces éléments peut permettre d'accompagner l'expérience subjective et idiosyncrasique du travailleur accidenté pour assurer l'évolution positive du processus de réadaptation et de réinsertion professionnelle.

L'expérience de la douleur et de l'incapacité est essentiellement conçue comme une expérience subjective singulière et non plus comme une manifestation objective et linéaire de la lésion physique. La conception du phénomène de la douleur a considérablement évoluée. Elle est passée d'un modèle médical, fondé sur des postulats voulant que 1) la lésion soit le résultat d'une pathologie physiologique et 2) les symptômes de douleur et d'incapacité sont reliée de façon linéaire à cette pathologie physiologique (34) à une approche biopsychosociale. Alors que le modèle médical définit les réactions émotives et comportementales comme des conséquences secondaires à la condition physique, de nombreuses études démontrent le rôle prépondérant des variables psychosociales dans la sévérité, le maintien et l'exacerbation des symptômes (4, 35). L'analyse de la majorité des TMS, ne permet pas de déceler de cause physique spécifique identifiable (35). Ceci permet de comprendre la grande variabilité de l'intensité de la douleur perçue de même que l'étendue de l'incapacité et des conséquences psychosociales d'un individu à l'autre. Selon le modèle biopsychosocial, cette diversité des manifestations suite à une lésion musculo-squelettique est intimement liée à l'interaction complexe entre les facteurs biologiques, psychologiques, sociaux et culturels (35, 36).

Une prémisse de ce modèle est que la douleur chronique est déterminée par les facteurs biologiques, psychologiques et sociaux. Ces facteurs s'inter-influencent. L'expérience de la douleur est évolutive. Elle se modifie avec le temps en fonction des circonstances biologiques, psychologiques et sociales (37). Il est donc possible que dans l'évolution d'un TMS, la prépondérance des différents facteurs biopsychosociaux puisse varier. Des auteurs suggèrent en effet que les facteurs déterminants de l'incapacité chronique varient selon que la personne soit en phase aiguë, subaiguë ou chronique (38). Par exemple, selon eux, en phase aiguë, les facteurs physiologiques risquent de prédominer, alors que dans la phase chronique, les facteurs psychologiques et sociaux influencent de façon importante l'évolution des symptômes et l'incapacité en modulant la compréhension des sensations physiques ainsi que les comportements ultérieurs de l'individu (39, 40). Toutefois, dans leur recension récente, Heitz et al. (41) trouvent peu de soutien empirique à ces conclusions. Ils observent que la durée des symptômes a peu de liens avec les facteurs de risque. Plus encore, ils dénotent même un taux plus élevé de la présence et de l'influence de facteurs psychosociaux dès les phases initiales de chronicité.

Il faut dire que la définition de la chronicité est loin encore de faire consensus. Par exemple, plusieurs s'entendent pour considérer la phase chronique comme étant la persistance des symptômes durant 3 mois (13), alors que d'autres la définissent en fonction d'une durée de 6 mois (42). De plus en plus, la chronicité n'est plus définie comme une détérioration continue et linéaire des symptômes mais plutôt probablement constituée de plusieurs épisodes récurrents (43). Certains ont également suggéré de définir la douleur chronique en tenant compte non seulement de la durée des symptômes mais aussi de leur impact multidimensionnel au plan fonctionnel et du bien-être psychologique (44).

6. Les recensions des écrits à ce jour

Au cours des 25 dernières années, nous avons assisté à la prolifération d'études visant à identifier les facteurs pronostiques déterminants de l'évolution et du maintien de la douleur et de l'incapacité chronique suite à un TMS. Afin de tenter de donner du sens aux multiples résultats de recherche et dans l'espoir d'identifier les facteurs de la chronicité les plus pertinents pour fournir ainsi des pistes d'intervention fiables, de nombreuses recensions des écrits (39, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60) ont vu le jour au cours de la dernière décennie. Cependant, force est de constater que la diversité et la variabilité des approches méthodologiques utilisées dans ces recensions ne permet pas de préciser les facteurs fiables contribuant de façon significative au pronostic des TMS.

Malgré les qualités de plusieurs de ces recensions, des lacunes importantes méritent d'être soulignées. Première observation. Même s'il est connu qu'un devis prospectif est plus adéquat pour l'identification de facteurs pronostiques (39, 61, 62) un grand nombre de recherches ont adopté un devis rétrospectif ou encore transversal. Plusieurs recensions ont quand même choisi d'inclure de telles études dans leur protocole d'analyse.

Deuxième point. Afin de tenir compte de la complexité et de la nature multidimensionnelle de la douleur et de l'incapacité chronique, une approche statistique multivariée est recommandée voire, essentielle (62, 63). Cependant, les conclusions de plusieurs recensions sont fondées sur des études dont certaines ne rapportent que des résultats univariés. Dans de telles conditions, il devient impossible d'identifier avec certitude les facteurs apportant une contribution explicative indépendante des autres déterminants potentiels.

Troisièmement, comme mentionné plus tôt, il est possible que certains facteurs déterminants de l'incapacité chronique varient selon la phase de chronicité de l'individu (38). Or, la majorité des recensions se sont attardées à une phase spécifique de chronicité (p. ex. phase aiguë) ou encore d'autres ont inclus des sujets à diverses phases de chronicité, sans pour autant en tenir compte dans leurs conclusions. À notre connaissance, une seule recension récente (41) a pris en compte les phases de chronicité dans l'identification des prédicteurs de retour au travail chez des sujets ayant des maux de dos. Malheureusement, leurs critères de classification de la phase chronique (sujets souffrant de maux de dos depuis dix semaines) ne correspondent pas aux définitions les plus reconnues.

Quatrièmement, la plupart des recensions ont tenté d'identifier les déterminants soit en se limitant à un impact particulier (p. ex. absence du travail, limitations fonctionnelles), soit en restreignant leur recension à des facteurs de risque spécifiques (variables psychologiques, facteurs psychosociaux liés au travail) ou encore en statuant sur les déterminants d'impacts « négatifs » sans discriminer entre eux.

Cinquièmement, la grande majorité des recensions se sont attardées aux déterminants de la réinsertion au travail ou de l'incapacité fonctionnelle, ou de la douleur. Par contre, plusieurs autres déterminants importants de l'expérience d'individus souffrant de TMS tels que la détresse psychologique, la qualité de la vie et la rechute ont été largement ignorés.

Sixièmement, aucune recension des écrits à notre connaissance n'a tenu compte de l'importance de considérer de manière concomitante des facteurs de risque multidimensionnels au niveau sociodémographique, médical, psychologique et environnemental. Finalement, ajoutons une lacune importante des recensions. Peu ont procédé à l'analyse minutieuse de la qualité des études recensées afin de nuancer leurs conclusions (64) et d'arriver à des critères fiables d'investigation.

7. Objectifs de la présente recherche

La présente thèse comporte deux articles visant l'identification des déterminants pronostiques chez des sujets souffrant de troubles musculo-squelettiques. Le premier consiste en une recension systématique des écrits ayant pour but de dresser un portrait exhaustif des études prospectives faites à ce jour et visant la détermination des facteurs de risque de plusieurs impacts découlant d'un TMS, tout en éclairant les différences liées à la durée des symptômes. Le second article vise d'une part, la validation de certains déterminants potentiels du retour au travail, soit des facteurs connus mais pour lesquels il y a toujours absence de consensus et d'autre part, l'exploration du rôle de certaines variables négligées, voire, ignorées dans l'étude des sujets souffrant de TMS. Cette étude a été réalisée auprès d'un échantillon de travailleurs accidentés avec atteinte au niveau du système musculo-squelettique recevant une indemnité de revenu de la CSST.

Contenu de thèse

Le premier chapitre de cette thèse est constitué d'un article qui s'intitule : *Biopsychosocial predictors of prognosis in musculoskeletal disorders: A systematic review of the literature.* Cet article a comme principal objectif une recension systématique des études portant sur les variables pronostiques de sujets souffrant de TMS tout en palliant à certaines lacunes identifiées au sein des recensions existantes. Dans un premier temps, l'objectif poursuivi est de dresser un portrait global de l'ensemble des déterminants

identifiés au sein d'études prospectives et ayant utilisées des analyses multivariées. Afin de tenir compte de l'aspect multidimensionnel de l'issue du processus d'adaptation de sujets souffrant de TMS (fonctionnement intrapersonnel, interpersonnel et extrapersonnel), plusieurs variables pertinentes ont été inclues au-delà des variables habituelles de la participation au travail, les limitations fonctionnelles et l'expérience de douleur, soit principalement la qualité de la vie, la détresse psychologique et la rechute. Il est alors possible d'identifier avec quelles variables de résultat les déterminants ont jusqu'à maintenant été associés de manière indépendante et d'ainsi préciser les variables qui méritent d'être étudiées davantage. Dans un deuxième temps, cet article identifie les études prospectives ayant inclues des facteurs pronostiques dans les domaines biologique, psychologique, social et sociodémographique. Puis, une évaluation de leurs qualités méthodologiques a été réalisée. Ceci a permis de déterminer le niveau d'évidence de l'apport indépendant de chaque déterminant avec chacune des variables de résultat. Les divergences entre le niveau d'évidence global et le niveau d'évidence en fonction des phases de chronicité ont aussi été identifiées pour chaque facteur pronostique.
Cet article sera soumis à la revue scientifique *Disability and Rehabilitation*.

Le deuxième chapitre de cette thèse présente un article empirique ayant pour titre : *Biopsychosocial determinants of work outcomes of occupationally injured workers receiving compensation: A prospective study*. Cet article reprend l'objectif d'identifier les déterminants pré-réadaptation d'un TMS dans le cadre d'une étude empirique auprès de travailleurs accidentés recevant une indemnité de remplacement de revenu tout en ayant un lien d'emploi compromis. Cette étude a été réalisée dans le cadre d'un projet de recherche plus vaste portant sur *Les effets d'une intervention de counseling sur la réadaptation de travailleurs accidentés à risque de chronicité* (65). L'issue du processus d'adaptation investiguée dans le cadre de la présente étude sera circonscrite au retour au travail après un suivi de 2 et 8 mois. Un premier objectif de cette étude vise l'identification de variables pronostiques pertinentes pour lesquelles il n'y a toutefois pas de consensus. Un deuxième objectif est l'exploration de la capacité prédictive de facteurs de risque biopsychosociaux et de variables pertinentes mais souvent négligées, voire, ignorées dans ce domaine de recherche qui pourraient contribuer à l'évolution du processus de réadaptation de travailleurs accidentés et dont le lien d'emploi est compromis.

Cet article sera soumis à la revue scientifique *Work*.

Article 1: Biopsychosocial predictors of prognosis in musculoskeletal disorders: A systematic review of the literature

By

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ABSTRACT

Objectives: To review the prognostic factors of musculoskeletal disorders while adopting a multidimensional perspective and including studies on various pertinent outcomes to the adjustment process. We also aimed to highlight the overall and phase-specific evidence. *Method*: We searched the Psychinfo and Ovid Medline(R) databases as well as pertinent periodicals and reviews and retained prospective studies of subjects suffering from specific or non-specific musculoskeletal pain that adopted multivariate statistical analysis. *Results*: We selected 105 studies, of which 68 included biopsychosocial and sociodemographic variables. For those studies using a biopsychosocial framework, we determined the level of evidence for every prognostic factor with each outcome. Strong evidence was found for recovery expectations and disability management with work participation outcomes. With disability outcomes, strong evidence was also found for recovery expectations, coping and somatization, and moderate evidence was found for pain behaviours. Comorbidity and duration of episode strongly predicted pain outcomes. The lack of studies for other outcomes prevented the emergence of any strong evidence. Some differences coinciding with phases of chronicity were also identified. *Conclusion*: Although uncertainty remains about the role of many prognostic factors, we found strong evidence to support the predictive value of clinically significant variables. There is, however, a need for additional research and replication, adopting more homogenous models and measurement methods.

INTRODUCTION

The prevalence of musculoskeletal disorders (MSD) has plagued industrialized countries for the last few decades and has become a worldwide epidemic. As a major source of work disability, musculoskeletal disorders represent from 25% to 40% of all compensated injuries and cost several billions of dollars each year in several countries (1, 2, 3, 4, 5). The preponderance of this problem led the World Health Organization (WHO) to declare 2000-2010 the joint and bone decade.

Musculoskeletal disorders are a major cause of work absence and are overrepresented in rehabilitation services compared to other conditions (6). Of all MSD, back pain is the condition most often associated with disability and high costs (7) and, therefore, most research efforts have focused on back pain disability. However, the incidence of upper-extremity disorders has been rapidly increasing and accounts for one third of all disabling industrial injuries (8). Information on lower extremities is less available. It is well known that a small portion of individuals with musculoskeletal injuries will evolve toward chronicity and account for the majority of the socioeconomic burden (9, 10, 11, 12). Beyond those costs and the primary losses related to the injury, individuals struggling with chronic pain and functional disability are also vulnerable to an accumulation of secondary losses in many domains (e.g., relationships, employment and familial roles, financial) that can result in significant emotional distress and diminished quality of life (QOL) (13, 14, 15).

Over time chronicity has been defined in various ways (16, 17) although there is greater consensus for the criterion of 4 weeks for acute pain, 4-12 weeks for subacute pain and 12 weeks or more for chronic pain (18). However, it is now recognized that the clinical course of MSD is not linear but involves recurrent episodes rather than a persistent worsening of symptoms (19, 20, 21, 22). Therefore, given the high rate of recurrence in MSD (23, 24), first return to work (RTW) is usually a misleading measure of outcome (25) and secondary prevention should also involve attempts to reduce the probability of recurrence (21). Furthermore, it has been proposed that the definition of chronicity should go beyond duration of symptoms and include the impact on the patient's function and psychological well-being (26). Chronic pain can, indeed, interfere with functioning and have repercussions in many life domains affecting a person's sense of self and future prospects (14).

Rather than a simple, unidimensional, medical or disease model, equating pain to tissue damage or psychogenic factors and suggesting a linear evolution from pain to impairment to disability, a more complex biopsychosocial perspective which encompasses biological/medical as well as psychological and social/environmental variables is now widely accepted as the reference for understanding a person's adjustment to musculoskeletal pain and disability (27, 28). Some proposed biopsychosocial models try to schematize the relationship between important determinants of the evolution towards chronic pain and disability (e.g., 29, 30, 31). A discussion of these models is beyond the scope of this paper but they all highlight the complex and interactive nature of the biological, psychological and social/occupational determinants of chronic pain and disability (32, 33).

Extensive clinical evidence supports Waddell's argument (34) that even though symptoms and diseases may originate from a health condition (although a majority of MSD have non-specific causes), the development of chronicity and incapacity often depends on psychosocial factors. Indeed, many authors point out the central role of psychosocial variables in the transition from an acute to a chronic condition and some have argued that psychosocial factors seem to play a greater role with increasing chronicity (21, 35, 36). Although it is not yet possible to accurately predict which injured individuals will develop chronic musculoskeletal disability, the late 1980s and the 1990s have seen the creation of major task forces and guidelines listing potential red and yellow flags[1] (see Kendall, 1999 for a review) (37). Since then, occupational factors (blue and black flags[1]) have also been identified as important, not only at the onset of MSD, but also in the transition from acute to chronic pain and disability (38). It is, however, the interaction of all these variables that shape the person's perceptions, and emotional and behavioural responses to his condition (36).

The plethora of studies since the mid-1980s aiming to identify the risk factors leading to chronic pain and disability, and the need to organize those results, has led, in recent years, to many quality literature reviews on prognostic factors of MSD disability (e.g. 23, 35, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54). Prospective and longitudinal designs are considered better for identifying prognosis indicators (35, 55, 56), however, much research in the field has been cross-sectional or retrospective. Although some reviews included only prospective cohorts, most also included retrospective or cross-

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[1] Red flags: Potential physiological risk factors for developing chronic pain. Yellow flags: Potential psychosocial risk factors for developing chronic pain. Blue flags: Perceived occupational factors believed by patients to impede their recovery. Black flags: Objective workplace factors possibly leading to the onset of LBP or promoting disability after an acute episode (from Gatchel, 2004) (38)

sectional designs. Most reviews also addressed the issue by focusing on particular aspects of the problem in terms of specific outcomes (e.g., RTW, functional disability, sickness absence), limited predictor variables (e.g., psychological variables, psychosocial work variables), clinical setting (e.g., primary care) or reported predictors of poor outcomes. Many reviews included the results of univariate analyses, therefore, reporting on risk factors that might not be predictors of outcomes beyond other confounders. However, if we are to account for the complexity of variables determining chronic pain and disability, multivariate approaches are essential (56, 57).

Moreover, only a few reviews have included subjects suffering from musculoskeletal pain in more than one pain site since most reviews focused almost exclusively on determinants of prognosis of [low] back pain. One major gap in the literature highlighted by Turner et al. (54) was the lack of comparison of prognostic factors between pain sites. In their review, which included prospective and retrospective studies, these authors compared back pain with mixed site pain and found few differences, except for occupation, between the two categories of injuries. Although some factors might be specific to certain conditions (58), it is likely that many determinants of adjustment to primary and secondary losses following a MSD are not site-specific, and adjustment will be determined by common psychosocial and environmental factors and their interaction, regardless of the pain location. In that light, Mallen et al. (47) identified a subset of potential generic factors that influence musculoskeletal pain outcomes across injury sites in a primary care population.

Also, similar psychosocial and environmental/occupational factors play a role in the etiology as well as the transition toward chronicity and its maintenance in MSD, although some differences are also found and certain determinants appear to be phase-specific (19, 35, 59). Some reviews have focused on specific phases of disability, mostly the acute phase, while others have included mixed studies from various phases of disability without distinguishing the similarities and differences in predictors between phases. To our knowledge, no review has examined and described the phase-specific and common determinants across phases of chronicity for various outcomes. Most reviews also exclude outcome variables that are central to the adjustment process and the experience of living with chronic pain and disability from the patient's perspective such as emotional distress, QOL and recurrence. Only pain, functional limitations and work participation outcomes are normally included. Finally, quality analysis has not yet been a frequently used approach in systematic literature reviews (60).

Consequently, we are pursuing two main objectives in this article: 1) complete a comprehensive review of prospective studies on prognostic factors of MSD while adopting a multidimensional perspective, and including studies on various pertinent outcomes to the adjustment process in order to identify the knowledge gaps in this literature; 2) identify the subset of studies that adopted a biopsychosocial framework, evaluate their methodological quality and assess the level of evidence for each predictor and respective outcome, while also contrasting the overall and phase-specific evidence.

METHOD

Search strategy.

Relevant articles from peer-reviewed journals were identified by searching the Psychinfo and Ovid Medline(R) databases from 1985 to 2007, inclusive, using various combinations of search terms (Appendix A). Furthermore, additional studies were identified through a bibliographic review of recent literature reviews up to 2007, as well as personally searching various relevant periodicals, from 1985 to 2007 (copy available from authors). The final searches were conducted in December 2007.

Inclusion and exclusion criteria

The final selection of articles was made using the inclusion and exclusion criteria described here. A study was included if: (1) the sample consisted of subjects suffering from specific and/or non-specific MSD at baseline (back, neck, upper and/or lower extremities); (2) the design was a prospective observational study (e.g., prospective cohort, inception cohort, prospective follow-up study or survey, longitudinal study), although randomized control trials were also included if they were analysed as a cohort study and treatment was controlled for; (3) multivariate statistical analyses were used to adjust for other potential confounders; and (4) it was published in peer-reviewed English or French journals. A study was not included if: (1) it had a retrospective or cross-sectional design; (2) it only had one predictor variable without including other confounders or reported only results from univariate analyses; (3) it investigated factors predicting only incidence of musculoskeletal pain OR were descriptive studies of clinical course without analyses of prognostic factors; (4) it studied the predictors of success or response to surgery or the effectiveness of a specific treatment; and (5) it investigated head trauma, neck injury due to whiplash or musculoskeletal pain resulting from traffic accidents, or focused on generalized pain disorders and progressive illnesses (e.g., fibromyalgia, rheumatoid arthritis, lupus, multiple sclerosis) or pain due to severe underlying conditions (e.g., cancer, spinal cord lesions).

Quality appraisal

Even though the inclusion criteria already insured a certain level of quality, the included studies were assessed for their overall methodological quality using a list of 11 methodological criteria (table 1) derived from previous literature reviews (40, 52, 61), and considered 6 major sources of potential bias in prognostic reviews, as suggested by Hayden et al. (62). Criteria that were positive received 1 point and criteria that were either negative or unclear received 0 points. Quality levels were based on those used by Franche et al. (63) and were categorized as follows: High quality (HQ) (8-11 points or 75-100% of the criteria met), moderate quality (MQ) (5-7 points or 50-74% met) and low quality (LQ) (0-4 points or 0-49% met). Two reviewers (FL, MC) rated each article independently and disagreements were discussed in a consensus meeting. We tested our quality criteria list in a pilot using 6 studies to refine the operationalization of the criteria. After refining the criteria list, the two reviewers obtained an adequate 85.8% initial agreement rate for the remaining papers. When disagreements persisted, a third independent reviewer (CL) was consulted for a final decision (appendix B).

Level of evidence

Similar to previous systematic reviews (44, 45), each potential prognostic factor was ranked on a scale from strong evidence of an association (strong) to strong evidence of no association (strong no) with each outcome variable (appendix C). *Strong evidence* was

Table 1: Methodological quality criteria applied to the articles with biopsychosocial predictors

CRITERIA	**SCORE**
Sample	+ / - / ?
1. Important characteristics (inclusion and/or exclusion) of the sample adequately described: positive if included age, musculoskeletal conditions or diagnosis criteria specified, duration of symptoms or sick leave.	
2. Source of population (setting): positive if setting where subjects were recruited is described.	
3. Representative sampling techniques: positive if consecutive or random cases.	
4. Adequate participation rate from eligible subjects (≥80%) or no differences between participants and non participants on key characteristics (e.g. age, gender, diagnosis or musculoskeletal condition).	
Attrition	+ / - / ?
5. Adequate proportion of participants completed the study (≥80%).	
6. Description of completers vs drop-outs: positive if attrition < 20% OR if completers and non-completers described or showed no difference when attrition > 20%.	
Measurement	+ / - / ?
7. A majority of the prognostic factors were assessed by reliable and valid measures OR a clear definition or description of the prognostic factors in a way that allows for replication.	
8. Outcomes assessed by reliable and valid measures OR a clear definition or description of the outcome variables in a way that allows for replication.	
Analysis	+ / - / ?
9. Important confounders included: positive if at least age, gender & baseline measures of outcome variables (when pertinent) were included.	
10. Sufficient presentation of data: positive if measures of association presented (OR, HRR, RR) as well as confidence intervals.	
11. Number of subjects at least 10 times the number of independent variables in final model.	

+ : positive; - : negative; ? : unclear

defined as consistent findings (≥75%) in at least 2 or more HQ studies AND multiple lower quality studies. *Moderate evidence* was defined as consistent findings in one HQ study AND at least one MQ study or multiple LQ studies. *Weak evidence* was defined as findings in only one HQ study OR consistent findings in at least two MQ or multiple LQ studies. *Inconclusive evidence* corresponds to other scenarios where there were inconsistent findings (<75%), insufficient findings (only one LQ study) or contradictory findings (divergence in the direction of the association between studies). *No evidence* reflects the absence of data on the association within multivariate biopsychosocial models.

Since the studies in this review were heterogeneous on many levels, such as the samples characteristics, methodological quality, prognostic factors and outcome variables included, as well as the way they were measured, statistical pooling was not possible and we, therefore, opted to conduct a best evidence synthesis (64, 65). This qualitative approach aimed to establish the strength of an association based on quality, quantity and consistency. It has been suggested, when conducting such analyses, to include only HQ studies to minimize bias in the conclusions drawn (64, 65). However, since there is no validated and standardized method for assessing study quality as well as level of evidence, we opted to include papers of all quality levels. This will allow us to present a more complete picture of the evidence to date. We will, however, highlight any differences that could have been affected by the inclusion of lower quality studies.

Data extraction

We first extracted information about the characteristics of the study population (inclusion and exclusion criteria), sample size at baseline, follow-up periods, attrition, multivariate statistical analysis used, all dependent and independent variables tested, source of information and significant multivariate predictors (see appendix E). Some of the papers were based on findings from the same study (i.e. 66, 146; 71, 72, 165; 80, 117; 85, 86, 88, 169; 90, 170; 92, 142, 141; 97, 98; 111, 112; 116, 139, 159; 119, 149, 150; 121, 122; 104, 106; 107, 108; 130, 168; 102, 103), however, they reported on a different outcome, a different follow-up period, and/or a different subset of the study sample. We, therefore, chose to include all papers in this review. Only results significant at $p \leq .05$ from multivariate analyses will be presented.

For dependent (outcome) variables, conceptually similar variables were classified under the following representative general categories: work participation, disability, pain, QOL, distress, recurrence and miscellaneous variables. Given the heterogeneity in measurement for many prognostic factors, we also clustered conceptually similar factors under the labels most frequently reported in the literature. Those prognostic factors were then reviewed for their association with various outcomes. First, the associations between all prognostic factors and outcomes were examined for all studies included (see tables 2 through 5; detailed textual description available upon request to the first author). Second, we identified studies that adopted a biopsychosocial perspective and included at least one potential prognostic factor in each biological, psychological, social/environmental and sociodemographic category (see appendix D for a summary of variables studied in each study). Since there is no consensus yet on a core set of determinants, we opted for a generous inclusion criterion without a priori knowledge that would allow us to be as inclusive as possible. These remaining studies were then assessed for their quality and served as the basis for the assessment of the level of evidence for the predictive value (beyond other confounders included in the multivariate models) of each prognostic factor with respective outcomes.

RESULTS

Description of studies retained

After review, the literature search yielded 105 articles that met the inclusion and exclusion criteria. Of those 105 studies, 68 included at least one sociodemographic, biological, psychological and social/environmental factor. After quality analysis, 40 were rated as HQ, 23 were rated MQ and 5 were rated LQ.

The studies' subjects were recruited from various settings, including primary care settings (e.g., general practitioners) in 42 studies, clinical settings (e.g., orthopaedic practices, osteopaths, chiropractor, physiotherapist, chronic pain center, multidisciplinary pain management or rehabilitation, back clinic, occupational clinics) in 29 studies, workplace and general population samples in 11 studies, and administrative or social security databases in 23 studies. The samples also varied in terms of pain or injury location. The majority of studies (N=64) included subjects suffering mainly from back pain, 2 studies included patients with neck pain alone, 10 papers included subjects with upper extremity pain and only 2 reported on lower extremity pain. Finally, 27 papers studied subjects with mixed pain sites (i.e., at least 2 different anatomical regions).

The duration of the symptoms or the absence from work varied greatly between studies. In our review, 16 studies recruited subjects in the acute phase (4 weeks or less), 6 papers studied subjects in the sub-acute phase (4 to 12 weeks) and 11 papers included subjects in the chronic phase of their disorder (12 weeks or more). Sixty-one studies had a mixed sample of subjects, 35 had subjects in all three phases, 18 had subjects in the acute and sub-acute phases and 8 had subjects in the sub-acute and chronic phases. For the purpose of organizing the results according to phases of disability, we will describe the findings according to four categories: (a) acute/subacute (45 papers); (b) chronic (11 papers); (c) mixed from all three phases as well as subacute/chronic samples (43 papers); and (d) unknown (6 papers).

The outcomes studied were also significantly diverse between studies, as was the way they were measured. Sixty studies included outcomes that we clustered under *work participation* variables (e.g., work status/RTW (n = 28); length of sickness absence, time loss or time to RTW (n = 17); (number of) sickness absence (n = 4); compensation status (n = 4); length of time receiving benefits (n = 10); disability pension (n = 1); early retirement (n = 1)). Forty-six papers included *disability* variables (e.g., functional limitations (n = 25); pain and disability/pain grade (n = 6); functional or symptoms improvement (n = 7); time until resumption of normal activity (n = 1); composite of functional adjustment (n = 2); perceived recovery or persistence of complaints (n = 9)). Twenty studies included *pain* variables (e.g., pain intensity (n = 9); pain duration or time to pain recovery (n = 3); persistence of pain (n = 6); pain improvement (n = 4); pain bothersomeness (n = 1)). Only 3 papers however included *distress* variables (depression; emotional adjustment; distress composite) and only 4 included *quality of life* variables (health-related quality of life (HRQOL; n = 3); satisfaction with symptoms[2] (n = 1)). *Recurrence* variables (recurrence of compensation (n = 4), symptoms (n = 2) or sickness absence (n = 1)) were included in only 7 papers and other variables labeled *miscellaneous* in 4 papers (health care and/or compensation cost (n = 3), use of medical services (n = 1), satisfaction with care (n = 1)).

Potential prognostic factors were also measured in a myriad of ways. Those that were conceptually similar were clustered to form 70 variables and their association with various outcomes will be examined. More specifically, 68 prognostic factors were studied in relation to work participation outcomes, 60 in relation to disability outcomes, 44 in

[2] Here, the authors defined symptoms satisfaction as an adaptation of a measure of perceived well-being and considered it a valid measure of poor outcome from a patient's perspective, which was highly correlated with symptoms severity and dysfunction. For this review, we considered it an approximate and subjective measure of health-related QOL.

relation to pain outcomes, 26 in relation to HRQOL outcomes, 18 in relation to distress outcomes, 26 in relation to recurrence outcomes and 40 in relation to miscellaneous outcomes (see tables 2 through 5 for all results).

Also, the limited number of publications looking at determinants of QOL, distress and recurrence made it impossible to discuss possible differences related to prognostic factors according to the phase of disability, for those outcomes. Moreover, of the 11 papers with chronic samples, none investigated outcome variables other than work participation (8 papers) and disability outcomes (3 papers), and a majority of prognostic factors were only investigated in one or two papers, at most. Therefore, there was no evidence that could potentially shed light on the possible differences between acute/subacute and chronic subjects for most prognostic factors and for outcomes other than those related to work participation and disability.

SUMMARY OF THE MAIN FINDINGS AND LEVELS OF EVIDENCE

All significant and non-significant associations, as well as all levels of evidence and discrepancies between phases of chronicity, are presented in tables 2 through 5. However, because of space constraints, we will only describe in detail the associations between prognostic factors and outcomes that were supported by strong evidence. For interested readers, detailed descriptions of all significant associations as well as levels of evidence are available from the first author.

Medical factors

Duration of episodes was one of two medical prognostic factors associated with *pain outcomes* and supported by strong evidence in our review (Table 3, p.32). Eight papers examined the predictive value of duration of episodes for pain outcomes but only 4 (50%) of those included biopsychosocial factors in a multivariate model. For instance, 3 HQ studies reported that longer duration of symptoms predicted lower change in pain intensity (71, 72) and longer time to pain recovery (163). No discrepancies were found when considering *phases of chronicity* since the evidence supporting the role of this factor came only from mixed samples. No studies examining the role of this factor on pain outcomes within a biopsychosocial model with (sub)acute or chronic samples were found.

The other medical variable found to be predictive of *pain outcomes* and supported by strong evidence was *comorbidity*, more specifically, musculoskeletal comorbidity (Table 3, p. 34). Out of 7 studies that reported on its association with pain outcomes, 5 (71.4%) studied the predictive role of comorbidity within biopsychosocial models. Four out of 5 HQ studies reported that having multiple musculoskeletal symptoms predicted lower change in pain intensity (71, 72) and, conversely, not having coexisting musculoskeletal complaints predicted higher change in pain intensity (165). Also, low back pain comorbidity in neck pain patients predicted persistence of neck pain (116). Interestingly, none of the 4 HQ studies that also investigated the role of other comorbid diseases found them to be significant predictors of pain outcomes. When we considered *phases of chronicity*, only two studies examined this factor in (sub)-acute samples, which resulted in inconclusive evidence. No studies with chronic samples were found.

Psychological factors

Of the psychological variables, *recovery expectations* was the most consistent predictor across outcomes and we found strong evidence that it was predictive of *work participation*, *disability* and *pain* outcomes (Table 4, p. 37). In the case of work participation and pain outcomes, however, this was true only when HQ studies were considered. Twenty-two studies investigated *work participation* outcomes and 19 (86.4%) adopted a biopsychosocial perspective. More specifically, 9 of 12 HQ studies showed that poorer expectations of recovery predicted longer time receiving compensation (80, 117) and longer sickness absence (76). Return to Work was predicted by higher expectation of recovery (149, 150). When expectations in terms of work capacity were considered, lower perceived work capacity predicted no RTW (109), longer time to RTW (105, 135, 145) or longer claim closures (105). Subjects expecting a longer period before being able to resume work had a longer duration of absenteeism (115, 145, 155) and took longer before achieving a lasting RTW (155). Also, a lower perceived chance of working in 6 months predicted number of days on sick leave (134) and longer time receiving compensation (160, 161). When considering *phases of chronicity*, strong evidence was also found in (sub)acute samples regardless of study quality but the evidence was inconclusive in chronic samples.

Four studies on *disability outcomes* investigated the predictive value of *recovery expectations* and 3 (75%) of those included biopsychosocial factors in a multivariate model (Table 4, p. 37). The 3 HQ studies supporting the role of recovery expectations reported that positive recovery expectations predicted improved functional status (80), and greater perceived risk of not recovering predicted higher interference with work or daily life as well as higher perceived disability (125). Finally, expectations of persistent pain were found to be a moderator of the relationship between education and higher disability (85). No significant differences were found when considering *phases of chronicity* although this factor was not studied in chronic samples with disability as an outcome.

Finally, *pain outcomes* were also predicted by *recovery expectations* and 3 papers out of 4 (75%) examined this association within biopsychosocial models. In 2 HQ studies there was strong evidence for positive recovery expectations to predict a reduction in pain intensity (80), and greater perceived risk of not recovering predicted high pain intensity as well as very bothersome pain (125). This evidence came only from the study of (sub)acute samples and no papers studying pain outcomes with chronic subjects were found. Therefore, no discrepancies were found when considering *phases of chronicity*.

We also found strong evidence, overall, that *somatisation* (Table 4, p. 36) was predictive of *disability outcomes*, although this was true only when we considered HQ studies. In total, 9 papers examined the role of somatic perception/somatisation as potential determinants of disability and 7 of those (77.8%) included biopsychosocial factors in a multivariate model. More specifically, 5 out of 6 HQ studies reported that a higher level of disability was determined by somatisation (86) and higher somatisation was predictive of non-recovery (persistent complaints) (94, 124). Somatisation was also found to be a significant confounder between psychosocial work characteristics and disability (133) as well as education and disability (85). When considering *phases of chronicity*, most studies were done on mixed samples and none studied this variable in (sub)-acute samples. Only one LQ study examined somatisation with chronic subjects as a significant predictor, however, this evidence is inconclusive.

Coping strategies were also identified as significant predictors of *disability* and *pain outcomes* and, in both cases, were supported by strong evidence (Table 4, p.37). Nine papers investigated this factor for *disability outcomes* and 7 (77.8%) of those included other biopsychosocial confounders. For the most part, adverse or passive coping styles were predictive of poorer functional disability. More specifically, 4 HQ and 2 MQ studies reported that a lower change in functional disability was predicted by a higher use of retreating (71), worrying (71) as well as distraction (72), and passive coping was associated with persistent disabling low back pain (LBP) (123). Higher functional disability was also predicted by high avoidance coping style (166). Similarly, a composite factor that included distraction and praying (with irrational beliefs) predicted functional non-adjustment (127). However, one study found contradictory results and reported that higher use of passive coping (retreating) was associated with higher functioning (165). When examining *phases of chronicity*, only weak evidence was found with (sub)-acute samples since none of those studies were of HQ. The only HQ studies supporting the role of coping came from mixed samples. Coping strategies were not studied in chronic samples with disability outcomes.

Strong evidence also supported the role of *coping strategies* in the prediction of *pain outcomes* (Table 4, p.37). This evidence came from 3 HQ papers, all from the same study using biopsychosocial models (100%). In two of those papers, lower change in pain intensity was predicted by higher use of retreating (71) and worrying (71, 72). In the third, using less active coping (distraction) predicted higher change in pain intensity (165). Given the absence of any study in the (sub)-acute and chronic phase, no evidence was found related to *phases of chronicity*.

<u>Environmental and workplace factors</u>

The only environmental or workplace variable that showed strong evidence (and only in HQ studies) was *Disability Management* (DM) practices, which was found to be predictive of *work participation outcomes* (Table 5, p.43). Actually, this variable was not studied with any other outcome. Of the 10 studies that included DM, 8 (80%) evaluated its predictive value in biopsychosocial models and, more specifically, 4 of 5 HQ studies found it to be a significant predictor. Availability of modified work was found to be predictive of a higher rate of RTW (82), unavailability of light duty predicted compensation status (claiming) (96), and absence of job accommodation predicted longer compensation period (117, 160). When considering *phases of chronicity*, we also found strong evidence in (sub)acute samples but only weak evidence in chronic samples.

Beyond the factors supported by strong evidence and described above, many other potential prognostic factors were examined in the literature but received less support. As can be seen in tables 2 through 5, the evidence for the vast majority of prognostic factors examined in this review was either inconclusive, or we found strong evidence that the factors were not significant predictors of outcomes in biopsychosocial multivariate models. One exception to this was pain behaviours which showed moderate evidence that it was predictive of disability outcomes (Table 4, p. 38). The limited number of studies including QOL, distress or recurrence outcomes did not allow for strong evidence to emerge for any prognostic factor. Only weak evidence, overall, was found for some associations. For example, exercise (Table 2, p. 30) and depression (Table 4, p.36) were associated with QOL outcomes. This was also true of ethnicity (Table 2, p. 30) and psychological (Table 4, p.36) distress (general measure) with distress outcomes. There was also weak evidence that control over work and job satisfaction (Table 5, p. 42) as well as compensation (past claims) (Table 5, p. 43) were predictive of recurrence outcomes. Finally, a host of other variables (not reported in the tables) were studied in mostly one study or a limited number of studies and were not included in the preceding variable categories. Although, for the most part, these variables were not found to be predictive in multivariate models, some were supported by mostly weak evidence and details are available from the first author.

Table 2: Sociodemographic predictors of MSD outcomes and levels of evidence (LOE)

		PREDICTED OUTCOME VARIABLES													
		Work participation variables		**Disability variables**		**Pain variables**		**QOL variables**		**Distress variables**		**Recurrence variables**		**Miscel. variables**	
PREDICTORS	**PHASE**	**YES**	**NO**§	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
AGE	OVERALL LOE†	INCONCL.		INCONCL.		INCONCL.		INCONCL.		INCONCL.		INCONCL.		INCONCL.	
	(sub)acute	**155**, **160,** 137 [100, 121, 140]	**93, 96**, **115**, **117**, **125**, **135**, **161**, 99, 109, 132, 134, 136, 154, 166, *78* [158]	**93, 107, 125**, **157**, 151	**81**, **108**, **139**, **157,** 127, 132, 159, 166 [77, 89, 90, 129, 138, 148, 152]	**93, 116**, **125**	[90, 152]	**79**, **125**	**93** [129]		127 [90]		[122]	**125**	
		(STRONG NO)				(STRONG)								(WEAK)	
	Chronic	**82**, **164,** 111, *73* [91, 95]	**76** [87, 147]		*110* [112]										
	Mixed	**68**, **84**, **145**, 98, *97* [144]	**85**, **104**, **162**, 83, 131, 143, 149, 150 [120, 101, 114]	**72**, **94**, [118]	**71**, **72**, **74**, **85**, **86, 123, 124, 130, 169, 165**, 83 [75, 69, 101, 114, 167, 168]	**71** [118]	**72**, **163**, **165**, 83 [69, 114, 153]					**104**	**162**, **163**		**88**, 83, 150
				(STRONG NO)		(STRONG NO)								(MODER. NO^A^)	
	Unknown	[67, 146]				92, 142, 141						[66]			
	OVERALL LOE	INCONCL.		STRONG NO		INCONCL.		STRONG NO		INCONCL.		INCONCL.		STRONG NO	
GENDER	(sub)acute	**81**, **93**, **135**, **161**, 99, 154	**96**, **115**, **117**, **125**, **155**, **160,** 132, 134, 136, 137, 156, 166, [121, 158]	127, 159	**81**, **93**, **107**, **108**, **125**, **157**, 132, 151, 166 [77, 129, 138, 152]	**93**	**116**, **125** [90, 152]		**79, 93**, **125**, [129]		127 [90]		[122]		**125**
	Chronic	**82** [95]	**76, 164**, 111, *73* [87, 91, 147]		*110* [112]										
				(INCONCL.)											
	Mixed	[70, 101, 144]	**68**, **104**, **145**, **162**, 98, 131, 149, 150, *97* [114]	**169**, **165** [89, 101]	**71**, **72**, **85**, **86**, **94**, **123**, **124**, **130** [75, 114, 118, 69, 167, 168]	**71**, **165**	**72**, **163** [69, 114, 118, 153]					**104**	**162**, **163**		**88**, 150
		(STRONG NO)		(STRONG NO)											
	Unknown		[67, 146]				92, 141, 142					[66]			

Table 2 continued

PREDICTORS	PHASE	Work participation variables YES	Work participation variables NO§	Disability variables YES	Disability variables NO	Pain variables YES	Pain variables NO	QOL variables YES	QOL variables NO	Distress variables YES	Distress variables NO	Recurrence variables YES	Recurrence variables NO	Miscel. variables YES	Miscel. variables NO
EDUCATION	OVERALL LOE	STRONG NO		STRONG NO		STRONG NO		STRONG NO		NO EVIDENCE		WEAK NO		STRONG NO^A	
	(sub)acute	*78*,	**93, 96**, **115, 117**, **125**, **135**, **160**, **161**, 99, 109, 132, 136, 137, 156, 154 [100, 121]	**157,** 151 [138]	**93**, **107**, **108**, **125**, **157,** 132 [90]	(WEAK NO)	**93** [90]		**79, 93, 125**		[90]		[122]		**125**
	Chronic	[95] (WEAK NO)	**164,** *73* [87]												
	Mixed	**68**, 83, 98 (INCONCL.)	**84,** 131, 149, 150, *97*,	**85**, **169**	**71**, **72**, **86, 94, 124, 130, 133**, **165**, 83	83	**71**, **72**, **163**, **165**						**163**		**88**, 83, 150
DEPENDANTS	OVERALL LOE	MODER. NO		STRONG NO		STRONG NO		NO EVIDENCE		INCONCL.		NO EVIDENCE		INCONCL.	
	(sub)acute	109 (INCONCL.)	156	(INCONCL.)	127	(WEAK NO)	**116**				127				
	Mixed	[144]	**84,** 149, 150		**71**, **72**, **85**, **165**		**71**, **72**, **165**								150
MARITAL STATUS / LIVING ARRANGEMENTS	OVERALL LOE	STRONG NO		STRONG NO		STRONG NO		WEAK NO		INCONCL.		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**96**, **117**, **135**, **160**, **161**, 99, 109, 154, 156 [100, 121]	(MODER. NO)	**157,** 127 [90, 148]		[90]		**79**		127 [90]		[122]		
	Chronic	(MODER. NO)	**164,** 111, *73* [87]	(INCONCL.)	*110*										
	Mixed	131	**84,** 131, 149, 150 [144]		**71**, **72**, **85**, **86**, **133**, **165**		**71**, **72**, **165**								
FINANCIAL VARIABLES / SOCIAL CLASS	OVERALL LOE	INCONCL.		STRONG NO		NO EVIDENCE		NO EVIDENCE		INCONCL.		WEAK		INCONCL.	
	(sub)acute	(STRONG NO)	**117**, **160**, **161**, 109, 136, 154 [140]	(MODER. NO)	**139,** 127 [77, 90]		[90]				127 [90]				
	Chronic	**164**	**76, 164**												
	Mixed	**104** [120]	**84**, 98, 149, 150, *97*		**85**, **86, 123**							**104**			150

Table 2 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
ETHNICITY	OVERALL LOE	STRONG NO		STRONG NO		MODER. NO		WEAK NO		WEAK		NO EVIDENCE		INCONCL.	
	(sub)acute	**161,** [100]	**117**, **160,** 99, 32,	[90]	**170,** 132, [77]		**170,** [90]		**79**	**170** [90]					
		(INCONCL.)		(MODER. NO)		(WEAK NO)									
	Chronic	*73*	[91]												
		(INCONCL.)													
	Mixed	[70 114]	**84**, 83, 143, [114, 128]	83, [114]	**85**, **86, 169**	[114]	83, [153]								83
LIFESTYLE - smoking	OVERALL LOE	STRONG NO		STRONG NO		STRONG NO		WEAK NO		NO EVIDENCE		WEAK NO		NO EVIDENCE	
	(sub)acute		**96**, **115**, 109, 132, 134, 137, 166, [121]	**107,** 132	**108,** 159, 166 [89]		**116**		**79**				[122]		
				(INCONCL.)		(WEAK NO)									
	Chronic		**164**												
		(INCONCL.)													
	Mixed	**84**	**68**, **162**, 98, 131, 143, *97* [120]		**71**, **72**, **133**, **165**		**71**, **72**, **165**						**162**		
		(INCONCL.)		(STRONG NO)		(STRONG NO)									
	Unknown						142, 141								
LIFESTYLE – BMI	OVERALL LOE	STRONG NO		STRONG NO		STRONG NO		INCONCL.		INCONCL.		WEAK NO		MODER.NO	
	(sub)acute	**96**	**93, 125, 135,** 132, 156 [121]	**125**	**93,** 127, 132 [148]		**93, 116, 125**	**125**	**93**		127				**125**
				(INCONCL.)										(WEAK NO)	
	Mixed		**84, 162,** 83, 143		**71**, **72**, **85**, **86**, **165**, **94**, **124**, 83		**71**, **72**, **165**, 83						**162**		83
														(INCONCL.)	
	Unknown						92, 142, 141								
LIFESTYLE - exercise	OVERALL LOE	STRONG NO		INCONCL.		INCONCL.		WEAK		NO EVIDENCE		WEAK NO		NO EVIDENCE	
	(sub)acute	109	**96**, **93**, **135**, 166, 156, *78*	**93**, **157**	**139**, 159, 166	**116**	**93**	**93**							
	Mixed		**84, 162**, 143	**74**, **165** [89]	**71**, **72**, **94**, **124**, **130**	**165**	**71**, **72**,						**162**		
	Unknown						142, 141								

Bold = High quality studies; Underlined = Moderate quality studies; Italicized = Low quality studies; Enclosed in square brackets = Studies that did not included at least one factor in all biopsychosocial and sociodemographic domains, that were not evaluated for their methodological quality and not considered in the level of evidence. Inconcl. = Inconclusive; Moder. = moderate;
Confounders for which information about their significance was not available are not included in this table (but are included in appendix D).
§ The presence of results in both the Yes and No column indicates that either the outcome or predictor was measured in more than one way but the association was significant in only one instance (see Appendix E for details).
† Overall levels of evidence (LOE) are reported for all predictors and outcomes but only discrepancies for phase-specific evidence and HQ studies are reported in parentheses.
A. There was moderate evidence for age and strong evidence for education as not predictive of health care cost (88, 150) with mixed samples. However, the evidence is inconclusive for those 2 predictors with use of medical services (83). .

Table 3: Medical predictors of MSD outcomes and levels of evidence (LOE)

		PREDICTED OUTCOME VARIABLES													
		Work participation variables		**Disability variables**		**Pain variables**		**QOL variables**		**Distress variables**		**Recurrence variables**		**Miscel. variables**	
PREDICTORS	**PHASE**	**YES**	**NO**§	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
TYPE OF ONSET	OVERALL LOE†	STRONG NO		INCONCL.		MODER. NO		NOEVIDENCE		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute		**81**, **117**, *78* [158]	**139**	**81**, **107**, **108**, **157**, 151, 159 [148] (STRONG NO)										
	Chronic		[87]												
	Mixed	[144]	83 (INCONCL.)	**74, 130** [118]	**130**, 83 [168] (INCONCL.)		**163**, 83 [118]						**163**		83
CAUSE OF SYMPTOMS	OVERALL LOE	INCONCL. (STRONG NO IN HQ STUDIES)		INCONCL.		INCONCL.		NO EVIDENCE		INCONCL.		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	**155,** *78*,	**115**, **160**, **161**, 132, 137, 166 [119] (STRONG NO)	**139**	127, 132, 166						127				
	Mixed	98 [158]	*97*, [158]	**71**, **72** [167]	**71**, **72**, **94**, **124**, **130**, **165**	**165**	**71**, **72**								
TYPE OF DIAGNOSIS	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		WEAK	
	(sub)acute	132 [121]	109, 166 [119, 140] (INCONCL.)		132, 166 (WEAK NO)								[122]		
	Chronic		**164** [87] (WEAK NO)												
	Mixed		**84** (WEAK NO)	**94** [167]	**85**, **86, 124**									**88**	
	Unknown	[67]													
PAIN SITE	OVERALL LOE	STRONG NO		INCONCL.		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute		**117**, **135**, 134	159	**139**										
	Chronic		**82,** *73* (WEAK NO)		*110*										
	Mixed	**84**, [114]	143, 149, 150 [101] (INCONCL.)	**72**, **74**, **94**	**71**, **94**, **124** [101, 114]	**72**	**71** [114]								150
	Unknown	[146]										[66]			

Table 3 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO**§	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
DURATION OF EPISODE	OVERALL LOE	STRONG NO		INCONCL.		STRONG		WEAK NO		NO EVIDENCE		INCONCL.		INCONCL.	
	(sub)acute	**135** [121, 140]	**81**, **117**, **115**, 99, 109, 134, 156	**139**, **157** [129]	**81**, **107**, **108**, 151, 159 [77, 148, 152]	[152]			**79** [129]						
	Chronic		**164,** *73* [87] (WEAK NO)		*110* [112]										
	Mixed	**68**, 149, 150 [120]	**84**, **104**, **162**, 83, 143 [106, 114] (INCONCL.)	**71**, **72**, **74**, **165**, **94**, **123**, **124**, **130**, [118, 89, 167, 168]	**85, 86, 169**, 83 [75, 118, 114]	**71**, **72**, **163** [118, 153]	83 [114]					**162**	**163**, **104**	150	83
LENGTH OF TIME OFF WORK/SICK LEAVE	OVERALL LOE	INCONCL.		STRONG NO		STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		WEAK NO	
	(sub)acute	**125**, 134	**93,** 166		**93, 125**, 151, 166		**93, 125**		**93, 125**						**125**
	Chronic	[91, 147]													
	Mixed	131, *97* [70, 120, 101]	98 [128, 114]		[75, 101, 114]		[114]								
INJURY SEVERITY	OVERALL LOE	STRONG NO		INCONCL.		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	[119]	**135**, **155**, **160**, 137	[138]											
	Chronic		**82** (WEAK NO)												
	Mixed		83, 149		83		83								
PAIN INTENSITY	OVERALL LOE	INCONCL.		INCONCL.		INCONCL.		WEAK NO		MODER. NO		INCONCL.		INCONCL.	
	(sub)acute	**115, 117**, **135**, **161**	**81**, **93**, **96**, **125**, 134, 136, 154, 156, 166, *78* [140, 158]	**125**, **157,** 151 [113, 129, 152]	**93**, **107**, **108, 139, 170**, 127, 166 [77, 90]	**125**, **170,** [90, 152]	**93**		**125**		**170,** 127 [90]				
	Chronic	**164** [87]	**82**, *73* [91]		*110*										
	Mixed	**68**, **84**, **104**, **145,** 150 [128, 101]	**162**, 98, 143, 149, *97* [120, 114]	**71**, **165**, **123**, **130**, **133** [75, 167, 168, 114]	**72**, **74**, **86**, **94**, **124** [69, 89, 101, 118]	**71**, **72**, **165**, [69, 118, 153] (STRONG)	**163** [114]					**162**	**104**, **163**,		150

Table 3 continued

PREDICTORS	PHASE	Work participation variables YES	Work participation variables NO§	Disability variables YES	Disability variables NO	Pain variables YES	Pain variables NO	QOL variables YES	QOL variables NO	Distress variables YES	Distress variables NO	Recurrence variables YES	Recurrence variables NO	Miscel. variables YES	Miscel. variables NO
FUNCTIONAL DISABILITY	OVERALL LOE	INCONCL.		INCONCL.		STRONG NO		INCONCL.		MODER. NO		INCONCL.		INCONCL.	
	(sub)acute	**81**, **93**, **96**, **117**, **155**, **160**, **161,** 99, 131, 134, 137, 156, 166 [100, 119, 140, 158]	**124**, **115**, **135**, 132, 154	**81**, **125**, **170,** 127, 166 [77, 90, 148]	**93**, **107**, **108**, **157,** 132, 151 [152, 113]	[90]	**93, 125**, **170** [152]	**125** [129]	**79, 93**	[90]	**170,** 127	[122]			**125**
	Chronic	**82**, *73* [87]	111	[112]											
	Mixed	**104, 162**, 98, 149, 150 *97*	**68**, **84**, **145**, 83, 143 [120, 128, 114]	**71**, **72**, **86, 123,** **165**, **169**, 83 [75, 101, 114, 118]	**133**, **94, 130** [89, 167]	83 [114	**71**, **72**, **163**, **165** [118]					**162**, **163**	**104**	**88**	83, 150
	Unknown					92									
PERSISTENCE OF SYMPTOMS	OVERALL LOE	INCONCL.		INCONCL.		INCONCL.		STRONG NO		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute	[140]	**81**, **117**, **125**, 134 (STRONG NO)		**81**, **125** (STRONG NO)		**125** (WEAK NO)		**79,** **125**						**125**
	Mixed	**84**, 83, 143	**145**, 143 [103]	**72**, **74**, **169**, **123,** 83 [118, 89]	**71**, **85**, **86, 133** [69]	**72**, 83	**71** [69, 118]							**88**, 83	
MEDICAL HISTORY – previous episodes	OVERALL LOE	INCONCL.		INCONCL.		INCONCL.		STRONG NO		INCONCL.		WEAK NO		INCONCL.	
	(sub)acute	**81**, **93,** *126* [140, 158]	**96**, **117**, **115,** 99, 132, *78* [119, 121]	**81**, 127, 151, 159, *126*	**93**, **107**, **108**, **139, 157,** 132 [77, 148, 152] (STRONG NO)	*126* [152]	**93, 116** (STRONG NO HQ STUDIES)		**79, 93**		127				
	Mixed		**68**, **84,** 83, 131, 143, [120] (STRONG NO)	**72**, **74**, **94**, **123,** **165** [118, 168]	**71**, **72**, **74**, **94**, **123**, **124, 130,** **133**, **165**, 83 [75, 89, 167]	**71**, **72**, **165,** 83 [118] (STRONG)	**163** [153]						**163**		83
	Unknown						141, 142								
MEDICAL HISTORY – previous sick leave	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**135**, **155,** 156, 166,	[148]	166 (INCONCL.)										
	Chronic	**76**	**164** (INCONCL.)												
	Mixed	[103]	**84** (WEAK NO)		**86, 94** [75]										

Table 3 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO**[§]	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
MEDICAL HISTORY – previous surgeries	OVERALL LOE	INCONCL.		STRONG NO		INCONCL.		NO EVIDENCE		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute		**81**, 137		**81**										
		(MODER. NO)		(WEAK NO)											
	Chronic		*73*												
	Mixed	**84**	83, 131 [120, 114]		**85**, **86**, 83 [114]	**163**	83 [114]						**163**		83
MEDICAL HISTORY – past treatment or medical visits	OVERALL LOE	STRONG NO		STRONG NO		INCONCL.		WEAK NO		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute		**135,** 156		151				**79**						
		(MODER. NO)		(INCONCL.)											
	Mixed	83 [103, 114]	**84, 104**	**74** [114]	**83, 85, 86**	[114]	83						**104**	83	
		(INCONCL.)													
MEDICAL HISTORY – past hospitalization	OVERALL LOE	INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	*78*			[148]										
	Mixed		**84**												
		(WEAK NO)													
MEDICAL HISTORY – Xrays or scans	OVERALL LOE	INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	109			[148]										
	Mixed		**68,** 131												
		(MODER. NO)													
MEDICAL HISTORY –medication	OVERALL LOE	MODER. NO		STRONG NO		STRONG NO		NO EVIDENCE		INCONCL.		NO EVIDENCE		NO EVIDENCE	
	(sub)acute				**107, 108,** 127 [152]		[152]				127				
	Mixed		**98,** 149, *97*		**71, 72, 165** [89]		**71**, **72**, **165**								
COMORBIDITY	OVERALL LOE	STRONG NO		INCONCL.		STRONG		WEAK NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**117, 93, 135, 136** [140]		**93, 107, 108**	**116**	**93, 116**		**93**						
				(STRONG NO)		(INCONCL.)									
	Chronic		**164**												
		(WEAK NO)													
	Mixed	**68**	131 [103]	**71**, **72**, **165**, **94**, **130**, [118, 167]	**72, 85, 86, 124** [89, 168]	**71**, **72**, **165** [118, 153]	**71**, **72**, **165**								
		(INCONCL.)				(INCONCL.)									

Table 3 continued

PREDICTORS	PHASE	Work participation variables YES	Work participation variables NO§	Disability variables YES	Disability variables NO	Pain variables YES	Pain variables NO	QOL variables YES	QOL variables NO	Distress variables YES	Distress variables NO	Recurrence variables YES	Recurrence variables NO	Miscel. variables YES	Miscel. variables NO
CLINICAL EXAMINATION – radiation/ sciatica	OVERALL LOE	INCONCL.		INCONCL. (STRONG NO HQ STUDIES)		INCONCL.		INCONCL.		NO EVIDENCE		INCONCL.		INCONCL.	
	(sub)acute	**96**, **115**, **135**, 166, [140]	**93, 117, 155,** 132**,** [121]	**157**, 132, 159 [77, 129]	**93, 108, 139,** 151**,** 166**,** [107, 148, 152]	**125**	**93** [152]	**79** [129]	**93**						
	Chronic		**164** (WEAK NO)												
	Mixed	**84, 145**, 131, 149,	**68, 162**, 83**,** [103, 120]	[75]	**85,** 83**,** [118, 168] (MODER. NO)		**163**, 83, [118] (MODER. NO)					**162**	**163**		83
CLINICAL EXAMINATION – straight leg raising	OVERALL LOE	STRONG NO		INCONCL.		MODER. NO		NO EVIDENCE		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute		**81,** 132**,** [119] (MODER. NO)	132	**81**,[148, 152]		[152]								
	Mixed	131	**68,** 83**,** 98**,** *97*	**74**, [75]	83		**163**, 83,						**163**		83
CLINICAL EXAMINATION – neurological symptoms	OVERALL LOE	MODER. NO		INCONCL.		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	[121]	**117,** 109, [119]	[107]	**108** [148] (WEAK NO)								[122]		
	Mixed		98**,** 131**,** *97***,** (WEAK NO)	**72**, **74**	**71**		**71**, **72**								
CLINICAL EXAMINATION – range of movement	OVERALL LOE	INCONCL.		INCONCL.		MODER. NO		NO EVIDENCE		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute	109 [121]	156**,** 137 [119, 121]	159	**108** [107, 148, 152]		[152]						[122]		
	Mixed	98	83**,** 131**,** 149**,** *97***,** [103, 120]	**74**	**130,** 83 [75]		**163**, 83						**163**		83
CLINICAL EXAMINATION – other signs and symptoms[1]	(sub)acute	**81**, 156, 137, [140]	137, 156**,** *126* [119]	**81**, **170**, *126*,	[148]	**170**	*126*			**170**					
	Mixed	**104**, 131, 149, [128, 106]	98, 131**,** 149**,** *97***,** [120]	**74**, **130** [75]	**71, 72, 74**, [75]	**71**, **72**							**104** [106]		

Bold = High quality studies; Underlined = Moderate quality studies; Italicized = Low quality studies; Enclosed in square brackets = Studies that did not included at least one factor in all biopsychosocial and sociodemographic domains, that were not evaluated for their methodological quality and not considered in the level of evidence. Inconcl. = Inconclusive; Moder. = moderate;
Confounders for which information about their significance was not available are not included in this table (but are included in appendix D).

1. Clinical examination - other signs & symptoms are an amalgam of factors and general conclusions that cannot be extrapolated. See text available from author for details on each prognostic factor.

§ The presence of results in both the Yes and No column indicates that either the outcome or predictor was measured in more than one way but the association was significant in only one instance (see Appendix E for details).

† Overall levels of evidence (LOE) are reported for all predictors and outcomes but only discrepancies for phase-specific evidence and HQ studies are reported in parentheses.

Table 4: Psychosocial predictors of MSD outcomes and levels of evidence (LOE)

		PREDICTED OUTCOME VARIABLES													
		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. Variables	
PREDICTORS	**PHASE**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
PSYCHOLOGICAL DISTRESS – depression	OVERALL LOE†	STRONG NO		STRONG NO		INCONCL.		WEAK		INCONCL.		NO EVIDENCE		INCONCL.	
	(sub)acute	132, 136	**81**, 99, 134 [100] (INCONCL.)	132 [90]	**81**, 127, 151 (MODER. NO)		[90]	**79**		127 [90]					
	Chronic	[87, 91]	111, *73* (INCONCL.)		*110* (INCONCL.)										
	Mixed		**84**, 143, 149, 150 [101] (MODER. NO)	**86**	**85**, **133**, **169**, **130** [75, 101]									**88**	150
	Unknown					92									
PSYCHOLOGICAL DISTRESS – anxiety	OVERALL LOE	INCONCL.		STRONG NO		WEAK NO		NO EVIDENCE		INCONCL.		NO EVIDENCE		INCONCL.	
	(sub)acute	132, 134	**81**, 99 [100]	132	**81**, 99, 127 (MODER. NO)						127				
	Chronic	111, *73*			*110* (INCONCL.)										
	Mixed		149, 150		**130** (WEAK NO)										150
	Unknown						141, 142								
PSYCHOLOGICAL DISTRESS – somatization	OVERALL LOE	MODER. NO		INCONCL. (STRONG HQ STUDIES)		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	Chronic				*110*										
	Mixed		**84,** 143	**85**, **86, 94**, **124**, **133**[75]	**130** [168] (STRONG)										
	Unknown					92									
PSYCHOLOGICAL DISTRESS - general measure	OVERALL LOE	STRONG NO		INCONCL.		STRONG NO		NO EVIDENCE		WEAK		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**160**, **161,** 156, *78*	**139, 107, 108,** 151	**170** (STRONG)		**170** (WEAK NO)			**170**					
	Chronic	**82** [87]	**76** (INCONCL.)		[112]										
	Mixed		98, *97* (WEAK NO)	**165, 130** [69]	**71**, **72**, **94**, **130,** **124** [168]	**165** [69]	**71**, **72** (INCONCL.)								

Table 4 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
PSYCHOLOGICAL DISTRESS – substance use/abuse	OVERALL LOE	STRONG NO		MODER. NO		WEAK NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		99, 156, *78* [100] (INCONCL.)		159 (INCONCL.)		**116**								
	Chronic		**164,** *73* (WEAK NO)												
	Mixed		**84,** 98, *97* (MODER. NO)		**85** (WEAK NO)										
PERSONALITY	OVERALL LOE	INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	99 [100]	99, 109, *78*,												
	Chronic		*73* [91]												
	Mixed	98, *97*													
RECOVERY EXPECTATIONS	OVERALL LOE	INCONCL. (STRONG HQ STUDIES)		STRONG		INCONCL. (STRONG HQ STUDIES)		WEAK NO		NO EVIDENCE		INCONCL.		INCONCL.	
	(sub)acute	**80**, **117**, **115**, **135**, **155, 160**, **161,** 109, 134 (STRONG)	**125**, 134, 156	**80**, **125**		**80**, **125** (STRONG)			**125**						**125**
	Chronic	**76** [147]	**164,** 111, [87]												
	Mixed	**145,** 105, 149, 150	**84**, [106]	**85** [69] (WEAK)		[69]							105	150	
	Unknown						92								
COPING	OVERALL LOE	STRONG NO		STRONG		STRONG		NO EVIDENCE		INCONCL.		WEAK NO		NO EVIDENCE	
	(sub)acute		134, 166, *78* (WEAK NO)	127, 166	[113] (WEAK)						127				
	Chronic	[87]													
	Mixed	131	**84, 162**, 98, *97* (INCONCL.)	**71**, **72**, **123**, **165** [75]	**130** (STRONG)	**71**, **72**, **165** (STRONG)							**162**		
CATASTROPHIZING	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		INCONCL.		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**160**, **161**		127, 151 (WEAK NO)						127				
	Mixed	[101]		**124** [75, 168]	**86, 94, 130** [101]										

Table 4 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
FEAR-AVOIDANCE	OVERALL LOE	INCONCL.		INCONCL. (STRONG NO HQ STUDIES)		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	**161**, 134, 154, 156, *126*	**93**, **160,** 136	**93**, **157**, *126*	**107**, **108**, 151 [113]	**93**	*126*								
	Mixed	**84**	[101]	**72**, **124**, [69]	**71**, **72**, **94**, **130**, **133**, **165** [75, 101, 168]	**72** [69]	**71**, **165**								
		(WEAK)		(STRONG NO)		(STRONG)									
LOCUS OF CONTROL	OVERALL LOE	INCONCL.		STRONG NO		NO EVIDENCE		NO EVIDENCE		INCONCL.		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	109	**96**, 166		166 (INCONCL.)						127				
	Chronic	**76,** 111 (MODERATE)		[112]											
	Mixed	98, *97*	**84**		**85**, **94**, **130** [75]										
INTENTION TO RTW (MOTIVATION)	OVERALL LOE	INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	Chronic	[95]													
	Mixed		98, *97*												
PAIN BEHAVIOURS	OVERALL LOE	INCONCL.		MODERATE		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute		[119]												
	Chronic		**82** (WEAK NO)												
	Mixed	98, 143, 149	83, *97*	**74**, 83	[75]		83								83
SOCIAL SUPPORT	OVERALL LOE	STRONG NO		INCONCL.		INCONCL.		NO EVIDENCE		INCONCL.		NO EVIDENCE		INCONCL.	
	(sub)acute		109, 156 (WEAK NO)		127						127				
	Chronic		**164** (WEAK NO)												
	Mixed		**84,** 98, 143, 149, 150, *97*	**71**, **94**	**72**, **124**,	**71**	**72**								150

Table 4 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
SUBJECTIVE HEALTH STATUS	OVERALL LOE	INCONCL.		STRONG NO		INCONCL.		STRONG NO		NO EVIDENCE		WEAK NO		MODER.NO	
	(sub)acute	**96**, **135**, 136	**93**, **115**, **117**, **125**, 109, 166, 156, 137	166	**93**, **125**, **139**, 159		**93**, **116**, **125**		**79**, **125**						**125**
						(STRONG NO)									
	Chronic	**164**													
		(WEAK)													
	Mixed	**68**, **84**, 149, 150	143	**72**	**71**, **86**, **94**, **165** [89]	**72**, **163**, **165**	**71**, **165**						**163**		150
		(STRONG)													
STRESSFUL LIFE EVENTS	OVERALL LOE	STRONG NO		WEAK NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**96**, *78*												
		(WEAK NO)													
	Mixed		**84**, 131, 143		**133**										
		(MODER. NO)													
SOCIAL/FAMILY PRESSURE	OVERALL LOE	NO EVIDENCE		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	Mixed				**85**, **86**										
READINESS TO CHANGE	OVERALL LOE	NO EVIDENCE		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	Chronic			*110*											
SATISFACTION WITH CARE	OVERALL LOE	INCONCL.		WEAK NO		WEAK NO		WEAK NO		NO EVIDENCE		NO EVIDENCE		WEAK NO	
	(sub)acute		**117**, **125**		**125** [77]		**125**		**125**						**125**
		(STRONG NO)													
	Mixed	**84**													
		(WEAK)													
CLINICIEN JUDGEMENT	OVERALL LOE	MODER. NO		INCONCL.		WEAK NO		NO EVIDENCE		NO EVIDENCE		STRONG NO		NO EVIDENCE	
	(sub)acute			[148]											
	Mixed		**104,** 98, *97*	**94**	**124**		**163**						**104**, **163**		
EXPECTATION OF TREATMENT EFFECT	OVERALL LOE	INCONCL.		WEAK NO		WEAK NO		WEAK NO		NO EVIDENCE		NO EVIDENCE		WEAK (NO)[B]	
	(sub)acute	**115**	**125**		**125**		**125**		**125**					**125**	**125**
	Mixed				[89]										

Bold = High quality studies; Underlined = Moderate quality studies; Italicized = Low quality studies; Enclosed in square brackets = Studies that did not included at least one factor in all biopsychosocial and sociodemographic domains, that were not evaluated for their methodological quality and not considered in the level of evidence. Inconcl. = Inconclusive; Moder. = moderate;
Confounders for which information about their significance was not available are not included in this table (but are included in appendix D).
§ The presence of results in both the Yes and No column indicates that either the outcome or predictor was measured in more than one way but the association was significant in only one instance (see Appendix E for details).
† Overall levels of evidence (LOE) are reported for all predictors and outcomes but only discrepancies for phase-specific evidence and HQ studies are reported in parentheses.
B. Expectation of treatment effect was predictive of satisfaction with medical services but not of health care cost.

Table 5: Environmental and workplace predictors of MSD outcomes and levels of evidence (LOE)

		PREDICTED OUTCOME VARIABLES													
		Work participation variables		**Disability variables**		**Pain variables**		**QOL variables**		**Distress variables**		**Recurrence variables**		**Miscel. variables**	
PREDICTORS	**PHASE**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
VOCATIONAL SECTOR	OVERALL LOE	STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	[121, 140]	**117** (WEAK NO)												
	Chronic		**76, 164**												
	Mixed	[144]													
	Unknown		[146]												
TYPE OF OCCUPATION	OVERALL LOE	STRONG NO		STRONG NO		WEAK NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**81**, **117**, **155**, 132, 156, *78* [100, 121]		**81**, **139**, **157**, 151, 159 [129]		**116**		[129]				[122]		
	Chronic	111	**164** (INCONCL.)												
	Mixed	[144]	**68**, **84**, **145**	**85** (WEAK)		153]									
	Unknown		[146]									[66]			
WORK SCHEDULE	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**93, 117**, 166, 156 [121]		**93**, 166 (MODER. NO)								[122]		
	Chronic		**164** (WEAK NO)												
	Mixed		131 [158] (INCONCL.)		**86, 94, 133** [102]										
JOB STABILITY	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute	109 [121]	**117**, **115**, 154, 166 [158]		166 (INCONCL.)								[122]		
	Chronic		**164,** *73* (WEAK NO)												
	Mixed	**84** [120]	131, 149, 150 (INCONCL.)		**86, 133**, **94**									150	150

Table 5 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
SIZE OF WORKPLACE	OVERALL LOE	STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute		**117**, 136, 154 [121] (MODER. NO)										[122]		
	Chronic		**164** (WEAK NO)												
	Mixed	[144]	**84** (WEAK NO)												
	Unknown		[67]												
PHYSICAL JOB DEMANDS	OVERALL LOE	INCONCL.		STRONG NO		STRONG NO		STRONG NO		NO EVIDENCE		INCONCL.		MODER. NO[C]	
	(sub)acute	**96**, **125**, **135**, **160**, 132, 137	**81**, **93**, **96**, **115**, 109, 134, 166, 136, 156, *78* [121, 140]	132	**81**, **125**, 166		**93**, **116**, **125**		**79**, **93**, **125**						**125** (WEAK NO)
	Chronic	[95]	**76**, **82**, **164** (STRONG NO)												
	Mixed		**68**, **84**, **104**, **162**, 83, 98, 131, 143, 149, 150 *97* [120, 128] (STRONG NO)	**74**, **130** [102]	**85**, **86**, **94**, **124**, **130**, **133**, 83		**163**, 93 (MODER. NO)					**162**	**104**, **163**		83, 150 (INCONCL.)
	Unknown					141	92, 142								
PSYCHOLOGICAL JOB DEMANDS	OVERALL LOE	STRONG NO		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute	166, 154	**115**, **135**, **160**, 134, 136, 156, 166, *78*	166											
	Chronic	**76** [95]	**82**, **164** (INCONCL.)												
	Mixed	143	**68**, **84**, 149, 150	**133**	**124** [102]										150

Table 5 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
CONTROL OVER WORK	OVERALL LOE	STRONG NO		INCONCL.		WEAK NO		WEAK NO		NO EVIDENCE		WEAK		INCONCL.	
	(sub)acute	[121]	**93**, **115**, **135**, **160,** 136, 156, 166		**93,** 166 (MODER. NO)		**93**		**93**						
	Chronic		**164** (WEAK NO)												
	Mixed	150	**162**, 143, 149	**133**, **124**	**94** [102]							**162**	**162**	150	
JOB SATISFACTION	OVERALL LOE	INCONCL.		STRONG NO		INCONCL.		INCONCL.		MODER. NO		WEAK		WEAK (NO)[D]	
	(sub)acute	**81**, **115,** *78*	**96**, **117**, **125**, **160**, 134, 156, 154, 166 [121]	**170,** 159	**81**, **125**, **107**, **108,** 127, 151, 166	**170**	**116**, **125**	**79**	**125**		**170,** 127			**125**	**125**
	Chronic	**164** [95]	111												
	Mixed	**162**	**68**, **84,** 98, 131, 143, 149, *97*		**133** [89] (WEAK NO)							**162**			
	Unknown					141									
WORK SOCIAL SUPPORT	OVERALL LOE	STRONG NO		STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute	**115,** 166	**96**, **135**, **160**, **161**, 156, 154		166 (INCONCL.)										
	Chronic		**82**, **164**												
	Mixed	**162**	**84,** 143, 149, 150 (INCONCL.)		**94**, **124, 133** [102]								**162**		150
WORKPLACE REACTION TO INJURY	OVERALL LOE	STRONG NO		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		INCONCL.	
	(sub)acute		**96**, **117**												
	Mixed	150	**84,** 149 (INCONCL.)												150
COMPENSATION (CURRENT CLAIM)	OVERALL LOE	INCONCL.		STRONG NO		NO EVIDENCE		WEAK NO		NO EVIDENCE		NO EVIDENCE		WEAK NO	
	(sub)acute	**81**, 99, *78*	**117**, 137 [140]	**81** [138]	151 [77, 152] (INCONCL.)		[152]		**79**						
	Chronic		**164** (WEAK NO)												
	Mixed	**68**, **84** [144]	**145,** 98, *97*, [120]		**85, 86, 169**										**88**
	Unknown	[67]													

Table 5 continued

		Work participation variables		Disability variables		Pain variables		QOL variables		Distress variables		Recurrence variables		Miscel. variables	
PREDICTORS	**PHASE**	**YES**	**NO§**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**
COMPENSATION (PAST CLAIMS)	OVERALL LOE	STRONG NO		INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		WEAK		WEAK NO	
	(sub)acute		**96**, **117**, 136												
	Mixed	131	**145**, **84**, **104**	**85**	**86, 169**							**104**	**104**		**88**
LITIGATION	OVERALL LOE	INCONCL.		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	*78*	154	[138]											
	Mixed	**68**	98, *97*, [120]												
DISABILITY MANAGEMENT	OVERALL LOE	INCONCL. (STRONG NO HQ STUDIES)		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE		NO EVIDENCE	
	(sub)acute	**96**, **117**, **160** (STRONG)	**96**, 154												
	Chronic	**82** (WEAK)													
	Mixed	[158] (MODER. NO)	**84**, 131, 149 [106]												
EMPLOYMENT STATUS (BASELINE)	OVERALL LOE	INCONCL.		INCONCL.		INCONCL.		INCONCL.		NO EVIDENCE		WEAK NO		INCONCL.	
	(sub)acute	*78* (STRONG NO)	**81**, **115**, **155**	**81**, **93**	**139, 107**, **108**, **157,** 151, 159 [77, 148]	**93, 116** (STRONG)		**93**	**79**						
	Chronic			*110*											
	Mixed	**84**, 83, 131 [114]	**68**, **104**, 149, 150, [128]	**74**, **123**, [114] (STRONG NO)	**71**, **72**, **86**, **94**, **124**, **165**, **169**, 83 [89]	(STRONG NO)	**71**, **72**, **165**, 83 [114]						**104**		83, 150

Bold = High quality studies; Underlined = Moderate quality studies; Italicized = Low quality studies; Enclosed in square brackets = Studies that did not included at least one factor in all biopsychosocial and sociodemographic domains, that were not evaluated for their methodological quality and not considered in the level of evidence. Inconcl. = Inconclusive; Moder. = moderate;
Confounders for which information about their significance was not available are not included in this table (but are included in appendix D).
§ The presence of results in both the Yes and No column indicates that either the outcome or predictor was measured in more than one way but the association was significant in only one instance (see Appendix E for details).
† Overall levels of evidence (LOE) are reported for all predictors and outcomes but only discrepancies for phase-specific evidence are reported in parentheses.
C. There was moderate evidence, overall, that physical job demands was not predictive of health care cost (125, 150). However, the evidence is inconclusive for use of medical services (83).
D. Job satisfaction was predictive of satisfaction with medical services but not of health care cost.

DISCUSSION

The goal of this article was to provide a review of the biopsychosocial predictors of adaptation to musculoskeletal pain and disability while adopting a multidimensional approach to the adjustment to MSD, and including outcomes outside the most reported impairment, disability and occupational variables. This was achieved by determining the contribution of each prognostic factor, beyond other confounders, within biopsychosocial multivariate models and identifying differences between phases of chronicity. In the following sections, we will first examine the main results based on our synthesis of those findings and discuss some of their theoretical and clinical implications. Second, the most significant discrepancies between the overall evidence and phases of chronicity will be highlighted. Third, we will describe the most meaningful differences between this review and other reviews that also used a best evidence synthesis methodology to analyze the literature on MSD. We will then address the clinical implications emerging from our results and, finally, discuss the methodological issues of this review by identifying its main strengths and limitations.

Considerations for potential prognostic factors

One of our first observations is that the evidence supporting the role of most yellow, blue and black flags, which are usually considered important prognostic factors of MSD outcomes and are often included in clinical guidelines, is either equivocal or does not support their predictive value beyond other predictors in multivariate models. Therefore, although our review identified some significant medical, environmental but mostly psychosocial prognostic factors, the lack of evidence for many factors suggests caution when drawing conclusions about a set of prognostic factors and their relevance to MSD outcomes. The limited evidence also makes it impossible to determine, for most predictors, whether they are more or less salient according to the phases of chronicity.

At least in part, this is likely the result of heterogeneity between studies in this field since most studies included samples with various characteristics (diagnosis or episode characteristics, variable duration of the current episode even within phases of chronicity, heterogenous medical history, severity of the MSD, etc.), measured independent and dependent variables in a myriad of ways, used different follow-up periods and did not include model replication, resulting in different sets of biopsychosocial predictors. Moreover, our criteria for study inclusion (assessed for study quality and level of evidence) were broad and allowed for studies with great disparity in terms of prognostic factors included in multivariate models. It should be noted that although we used pertinent methodological criteria to assess the quality of the studies, those criteria were not as strict as in other reviews and yet, we were only able to identify a small number of variables with strong evidence. Stricter criteria would likely have reduced the number of significant predictors identified in this review. This is important to keep in mind when comparing our results with other reviews, which might have identified more prognostic factors but did not assess their level of evidence.

Nevertheless, despite the heterogeneity between studies, our review identified biopsychosocial factors that demonstrated more consistency in the prediction of certain outcomes in multivariate biopsychosocial models, as can be seen in tables 2 through 5. Concerning the prediction of work participation outcomes, the predictive value of recovery expectations and disability management was supported by strong evidence. This was also the case for recovery expectations, coping and somatisation, which were found to be predictive of disability outcomes. Strong evidence was also found for recovery expectations, coping, duration of episodes and comorbidity as prognostic factors of pain outcomes.

The most consistent prognostic factor was expectations (of recovery), which showed strong evidence that it is an significant predictor of work participation, disability and pain outcomes. Despite the various operationalizations of this construct in the studies included in this review (e.g., expected time to change of condition, expected time to usual activities, expected return to usual job, expected continued pain, pain self-efficacy, perceived work capacity, etc.), the results support the growing recognition that the patient's beliefs play an important role in their adaptation to health problems. Recovery expectations have also been found to play a significant role in predicting outcomes with various clinical conditions such as, for example, cardiac surgery, myocardial infarction, hip fracture, psychiatric conditions and whiplash injuries (171, 172).

Of the other prognostic factors found to be predictive of work participation outcomes, the role of disability management (DM) variables (mainly the availability of light duties or workplace accommodations) was supported by strong evidence. Disability management interventions include primary, secondary or tertiary prevention addressing mostly black flags in trying to prevent the onset of injuries as well as disability following an acute episode. Other reviews recently demonstrated the favourable impact of some DM practices (63, 173, 174). Although those reviews converged on the observation that DM leads to positive outcomes, the studies included often did not control for other confounders or show the specific contributions of these practices. Similarly, the studies included in our review do not cover all workplace DM practices and do not allow us to identify specific evidence for specific components. However, by including only multivariate prospective studies, this review allowed us to conclude that modified work practices (e.g., accommodations, light duties) have prognostic value beyond other biopsychosocial factors. To our knowledge, the only prognostic review to assess the level of evidence of DM in studies that also controlled for other predictors mistakenly reported moderate evidence from 2 studies that light duty prolonged sick leave (52).

There was also strong evidence that coping strategies for functional disability and pain are significant predictors of outcomes. Musculoskeletal disorders and their ramifications in terms of work absence, functional and social limitations, are important stressors and the way someone responds to those challenges undoubtedly affects his adjustment. Rehabilitation-related research repeatedly demonstrated a link between coping strategies and adjustment (175, 176, 177, 178, 179, 180). Generally, active or problem-focused coping have been linked with positive adjustment and passive and emotion-focused, as well as avoidant coping strategies, have been associated with negative adjustment outcomes such as pain, disability and distress. The overall conclusions from our review confirm the negative impact of passive coping on disability and pain outcomes, with one exception finding that less active and more passive coping were predictive of positive disability and pain outcomes (165). More studies are needed to confirm those results since all three papers were based on different cohorts of the same study. Surprisingly, few other prognostic reviews on MSD reported on coping (43, 49, 51, 53) and none, to our knowledge, assessed its level of evidence.

The role of somatisation or somatic symptoms in predicting disability outcomes was also supported by strong evidence in this review. Somatisation has been mostly conceptualized either as the predominant or exclusive somatic presentation of a psychiatric disorder (presenting somatisation) or as high levels of medically unexplained symptom reporting in multiple physiological systems (functional somatisation) (181). However, there is a growing consensus for the need to adopt an integrated view of pain and unexplained somatic symptoms that goes beyond the dualistic view of psychological versus organic etiology (182, 183). Furthermore, somatisation always includes the presence of somatic symptoms that cannot be explained by biological findings (181). This finding is especially significant considering that a majority of MSD are non-specific. Since determining the presence of somatisation depends on the difficult task of excluding an organic cause for the somatic symptoms (181), caution should be used in drawing conclusions about the role of somatisation in predicting disability. It is not clear if the somatic symptoms endorsed in the studies included in our review could stem from organic causes. However, those results are in line with others who also found a consistent and strong association between the report of multiple bothersome somatic symptoms and disabling pain (184).

Our review also found strong evidence that musculoskeletal comorbidity was a consistent predictor of poor pain outcomes in multivariate models. It has often been reported that the majority of individuals with MSD tend to have musculoskeletal pain in more than one pain site (185, 186, 187, 188, 189). Frequent associations between back pain and other diseases (e.g., respiratory disorders, cardiovascular disease, other chronic conditions) have also been reported (190, 191, 192). The mechanisms involved in these associations are not yet understood and these authors suggested that chronic disorders tend to cluster in some individuals who might have a lower threshold for various diseases. Moreover, Kamaleri et al. (193) found that, beyond other factors, the number of pain sites was by far the main predictor of the number of pain sites 14 years later, suggesting a stable pattern of multi-site pain in some individuals. Despite the prevalence of comorbidity in this population, less than 25% of the studies in this review included this factor in their models.

The role of longer duration of episodes in predicting poor pain outcomes was also supported by strong evidence. There was, however, strong evidence that the duration of episodes was not predictive of work participation and the evidence was inconclusive with respect to disability and recurrence outcomes. Only when we considered, specifically, the duration of work absence did we find inconclusive evidence, at best, for its predictive value relating to work outcomes. This suggests that in multivariate models, other factors are often more explicative than symptoms duration for most outcomes. However, duration of episodes has always been viewed as an important risk factor for rehabilitation outcomes and early but timely intervention is usually advocated to prevent this transition. Dunn and Croft (194) reported few differences related to improved disability for individuals experiencing less than three years duration of back pain. As these authors suggested, duration might not be as important as the idiosyncratic changes that can take place in the biopsychosocial characteristics of the individuals as they engage in a disablement spiral (e.g., lower self-efficacy, higher catastrophization, fear-avoidance, distress and physical deconditioning, etc.). Except for the existence of a few models (e.g., 29, 30, 31, 195), there has been a lack of conceptual models describing the complex, dynamic and interactive relationship between risk factors contributing to the transition from acute to chronic pain and disability. One certainty is that the evolution of symptoms, as well as their determinants, is highly idiosyncratic.

At this stage, we can conclude that psychosocial prognostic factors are more strongly associated with multivariate model outcomes that include biopsychosocial variables. Individuals most at risk of poor outcomes seem to be those with poor recovery expectations, passive coping strategies, more somatisation symptoms, longer episode durations, musculoskeletal comorbidity and those who do not benefit from disability management interventions.

Considerations for phases of chronicity

It is important to keep in mind that many of the discrepancies in the amount of evidence between the phases highlighted in tables 2 through 5 are due to a smaller number of studies for a specific phase. More studies are, therefore, needed to confirm the trends. We will only underscore those that emerge from distinct results between phases or from the overall evidence.

In addition to the strong evidence that recovery expectations and DM were predictive of work outcomes in (sub)acute samples, we also found strong evidence supporting the predictive value of psychological distress (general measures) for disability outcomes and age for pain outcomes. Evidence for the role of comorbidity in the prediction of pain outcomes, although strong overall, was inconclusive in the (sub)acute sample. Similar to the overall evidence, all other prognostic factors were found to be either not associated with outcomes or supported by inconclusive evidence in (sub)acute samples. In chronic samples, the limited number of studies did not allow us to obtain strong evidence for any prognostic factor. There were, however, discrepancies between overall and (sub)acute evidence. For example, there was moderate evidence that lower health locus of control, and weak evidence that poorer perceived general health status were significant predictors of poor work participation. Finally, the evidence for some significant associations was based only on samples consisting of mixed phases of chronicity. More specifically, there was no evidence in (sub)acute samples supporting the predictive value of somatisation for disability, as well as no evidence in (sub)acute and chronic samples supporting the predictive value of coping and duration of episodes for pain outcomes.

It has been suggested that social and psychological factors play a smaller role in acute episodes but that their impacts increase with time to become major factors in chronic pain and disability (53). Although this is likely the case, there is little evidence of a clear distinction between the types of predictors in the (sub)acute and chronic phases of pain and disability. The limited number of studies with subjects already in the chronic phase of their condition makes it impossible to establish strong levels of evidence for any variable. Furthermore, this review shows that psychosocial predictors appear to be of importance early in MSD. We did not find any biological predictors that attained a strong level of evidence in (sub)-acute samples. Only functional disability, with 72.2% of studies supporting its predictive value for work participation in (sub)-acute samples, almost reached our criteria for strong evidence. Only one other review, to our knowledge, assessed the level of evidence of biological variables in (sub)-acute samples and found strong evidence that disability and radiating pain were predictive of duration of sick leave (52). More research is needed to better understand the complex dynamic between all determinants involved, however, the evidence highlights the importance of adopting an integrated biopsychosocial approach early in the acute phase before a transition toward a chronic pain and disability state.

Considerations for outcomes: neglected variables

At first glance, the results in tables 2 through 5 indicate that determinants of work participation, functional limitations and, to a lesser extent, pain variables in individuals with MSD have been extensively researched and, despite this, there is little certainty about which prognostic factors are predictive for each outcome. However, other outcome variables included in this review, such as recurrence, quality of life and psychological distress, have been largely ignored. Some authors suggest that the choice of outcome measures is very sensitive to the values of the stakeholders involved and tends to reflect providers' and payers' values, rather than client values (56, 196). This may explain the preponderance of work participation outcomes and, to a lesser extent, functional and pain outcomes, which seem to be mostly driven by an insurance and biomedical model (see Schultz et al., 2007 for a review) (197), and not by a biopsychosocial perspective.

The scarcity of prognostic cohort studies investigating outcomes beyond work participation, functional limitations and pain variables is striking. This is surprising, especially with respect to recurrence since it is well recognized that many patients return to work with significant levels of pain, limitations and low QOL (198), and a significant proportion of them will experience recurrence (23, 25). The detrimental effect of recurrence on pain, functional limitations, HRQOL, overall health outcomes (199), and work disability, medical and indemnity cost (200) has been reported and suggests the need to better understand its biopsychosocial determinants.

The burden of MSD and subsequent disability is far reaching, potentially affecting most aspects of a person's life (13, 14) in the most idiosyncratic way. Therefore, adopting a client-centered approach and considering progress and outcomes in a more holistic manner by including physical, occupational, emotional and social well-being seems essential. Quality of life has been considered an important outcome measure in rehabilitation and health care studies and addresses those aspects of the MSD patient experience (201, 202, 203). However, our review found only a few studies that investigated the predictors of QOL in prognostic research on MSD. Although most studies tended to adopt a more objective and health-related approach to QOL, several authors argued that QOL was not determined by the objective life conditions but by the individual's subjective appraisal of his life (196, 204, 205, 206). Thus, future research should favour measures that capture subjective well-being, and satisfaction with life and life domains, while considering the relative importance of these qualities for each individual.

Our review also highlights the rare inclusion of distress as an outcome measure in this area of research. The prevalence of psychopathology, mainly depression, in MDS populations is unquestionably much higher than in the general population and even other pain conditions (207, 208, 209, 210). Although the evidence supporting the prognostic value of distress variables has often been inconclusive (42, 44, 49, 52), there are reports in the literature of a significant association between distress, mostly depression, and pain, as well as work outcomes (211, 212). Moreover, research has stressed the importance of attending to psychopathology in the treatment of musculoskeletal pain since distress symptoms can impede rehabilitation efforts (30, 212). Consequently, we reiterate the recent call by some authors to consider distress as an important outcome measure and not just a prognostic factor (198, 213).

Clinical considerations

The search for prognostic factors must focus on the factors that rehabilitation intervention can impact in a significant way. The significance of duration of episodes in the prediction of pain outcomes reaffirms the importance of early intervention. It is a best practice to engage in early interventions where the injured individual is encouraged to go back to his regular activities, including work (214). However, optimal RTW conditions must respect the injured worker's limitations and progress to avoid re-injury or aggravation (215). Given the unspecific nature of most musculoskeletal pain and the fact that a higher number of secondary conditions has been associated with worse outcomes (187, 216), our results suggest the importance of considering other comorbid physical conditions in order to optimize rehabilitation interventions. Some suggest that targeting interventions on only one region, as is often the practice, might impede efforts to reduce pain and disability (185). Moreover, workplace DM practices that focus on accommodating limitations related to one musculoskeletal complaint might contribute to the worsening of another (186).

Our results also suggest the need for early psychosocial interventions before chronicity sets in. In our review, most of the factors supported by strong evidence, such as expectations (self-efficacy), coping and somatisation, fall in that category. There is convincing evidence that self-efficacy can be enhanced during the course of rehabilitation (217, 218), which can lead to more sustained self-management efforts by patients (219, 220). In turn, this has a positive effect on outcomes (221, 222, 223, 224, 225). Although passive coping strategies have been associated with worse outcomes, it is usually recognized that specific strategies or specific categories of strategies are not systematically adaptive or maladaptive (Lazarus, 226; p.111; 227). Instead, it is the flexibility of coping resources that determine the level of adjustment (228). Studies showed that helping people develop adaptive coping strategies can lead to lower pain intensity and higher tolerance (36).

Although patients with persistent somatisation often demonstrate abnormal illness behaviour, one should be cautious in labeling somatic symptoms as abnormal illness behaviour (229). It is important, however, to identify early abnormal illness behaviours and psychological risk factors to prevent unnecessary medical investigations and treatments that can have an iatrogenic effect (229). Although no specific somatic causes can be identified in a majority of MSD, the emphasis on a psychological explanation could also negatively impact a patient who views his condition as a physical one. This could lead to a rejection of the explanation, interventions or a ruptured therapeutic relationship (183, 230). Therefore, when addressing these risk factors, the centrality of the patient's subjective experience must be paramount to any rehabilitation intervention.

Since many potential prognostic factors are not supported by consistent evidence, one must be careful when trying to identify a particular profile for an individual at risk of chronicity who is experiencing difficulty adjusting to their MSD and its consequences. Our results indicate that patients who have more positive expectations, use more active and adapted coping strategies and present less somatisation and comorbid symptoms are more likely to have better outcomes. We can infer that the risk factors validated by our results are likely to interact, in some capacity, in shaping the patient experience. Consequently, this suggests that clinicians be particularly sensitive to the patient's expectations since this factor was the most consistent predictor across various outcomes. Rehabilitation interventions should include efforts to help patients develop more positive expectations and adapted coping skills. In this context, clinicians should also attend to comorbid symptoms that could complicate the clinical portrait and be alert to early signs of somatisation. Moreover, validation of the patient's subjective experience of his symptoms should be central to the rehabilitation process. This should also guide adapted disability management strategies to facilitate occupational reintegration as well as the timing of interventions, in general, to insure optimal outcomes.

Differences with other reviews

To our knowledge, there are few prognostic factors supported by strong evidence in other systematic reviews assessing the level of evidence. Of those, however, our review could not confirm the strong evidence reported by Steenstra et al. (52) that female gender, receipt of compensation, heavy work (higher physical demands), social isolation and dysfunction, higher functional disability and radiating pain, prolonged the duration of sick leave. High pain intensity was also reported, elsewhere, to be a strong predictor of functional disability and symptoms (45) but was not confirmed by our results. Some of our findings are supported by other reviews, mainly the role of expectations, which was supported by strong evidence (42) or consistent findings in reviews that did not assess its LOE (43, 44, 54). Some reviews also reported consistent findings for DM (40, 43, 51), coping (43) and duration of episodes (51), although they did not assess LOE. Finally, the predictive value of age for work outcomes in (sub)-acute samples is also supported by Steenstra et al. (52).

The differences between our review and other systematic reviews assessing LOE can be attributed, in part, to different inclusion criteria since some reviews included studies with a retrospective design, different quality criteria and methodology in attributing LOE were used, and different episode durations and univariate results were included. Also, no other review included studies with only biopsychosocial models. This makes it impossible to draw conclusions, with any certainty, about the predictive value of factors beyond other variables, since they were not systematically tested within biopsychosocial multivariate models.

Strengths and limits of the review

The strengths of this review are its comprehensiveness, the description of predictors according to phase of chronicity, the inclusion of pertinent outcomes beyond the occupational, functional and pain domains, and the inclusion of only prospective designs and multivariate analysis. Carrying out a quality assessment of the studies, which has not been a common practice to date (60), and, consequently, determining the level of evidence for each factor based on studies with biopsychosocial models are among the most important strengths and contributions of this review. This allowed us to present a broad portrait of the current evidence on prognostic factors of outcomes for subjects with MSD, to identify some knowledge gaps in this literature and to compare prognostic factors according to phases of chronicity.

This review has some limitations and bias, however, and the results should, therefore, be interpreted with some caution. For example, even though we performed a comprehensive literature review, the search terms included, the choice of databases, and the absence of non-published studies might have contributed to a publication bias since some pertinent articles might have been excluded. The fact that some cohorts included in this review published more than one paper could also have biased the results. To minimize bias resulting from higher quality scores for papers from one study, because information omitted in one paper might have been available in another, we chose to rate the quality of the papers individually.

There is no consensus on quality criteria and methodology to determine the level of evidence. Therefore, the ratio of high and lower quality studies varies between reviews, depending on the criteria included. In this review, we used criteria similar to other reviews and followed some recommendations suggested by Hayden et al. (62) in order to minimize bias in reviewing this literature. Some of our criteria, however, may not have been as strict as in other reviews and might have led to higher quality scores. For instance, we rated measurements positively if they allowed for replication and not only if there was proof of validation or if Cronbach's alphas were reported. In fact, only 6 studies reported Cronbach's alphas for the measures they used. Despite our inclusiveness, few variables were identified as strong prognostic factors. This suggests that had we used stricter criteria, it is likely that even fewer significant factors would have been identified. Also, Mallen et al. (47) contended that equal weighting between quality criteria is questionable because one study with a major methodological flaw might have the same quality score as another with a minor one.

The categorization for phases of chronicity used in this review could also have influenced the results. It is possible that prognostic factors will influence the outcomes differently over time, during the acute, subacute and chronic phases (59). Therefore, combining acute and subacute samples might have also influenced our conclusions. Although a prognostic factor's importance might evolve with time even during the non-chronic phase, one of our goals was to compare subjects in the chronic phase and those who had not yet transitioned to a chronic state. However, we examined the results while isolating studies with acute samples (less than 4 weeks) and few differences were observed to result from including the subacute sample. Therefore, our results do not appear to have been significantly affected by the categorization used.

Even though 2-3 HQ studies are used as a criterion for strong evidence in most reviews, it could be argued that when evidence is based on only 2 or even 3 HQ studies, this evidence remains limited. It is our opinion that strong evidence based on a small number of studies should not be enough to discard these variables as insignificant predictors or to confirm a strong predictive value, especially given the heterogeneity between studies.

Finally, because we wanted to provide a larger overview of potential predictors of various MSD outcomes, heterogeneous papers were included (e.g., designs, clinical settings, types of conditions, compensated or not, at work or not at baseline, etc.). Although this is based the valid premise that beyond possible specific effects, adjustment to MSD is likely to be determined by common psychosocial and environmental factors, a resulting loss of specificity is necessarily a consequence and limit to this review.

Conclusion

Despite the plethora of research in this field, it is still difficult to identify a core set of prognostic predictors for MSD outcomes, as reported by various reviews. Most studies show, however, that it is the combination of various predictors that best predict adjustment to musculoskeletal pain, thus supporting the notion that the prognosis of MSD is multi-dimensionally determined. Conversely, potentially important prognostic factors are not systematically measured across studies, stressing the need for greater consistency in future research. More high quality prospective research and replications that adopt a biopsychosocial perspective are needed, along with similar sets of prognostic factors, higher consistency in measurement methods and sufficiently high sample size to allow stratification of chronicity phases (or recurrence patterns) or other possible clusters of musculoskeletal pain and disability course. Given the multidimensional nature of MSD and the adaptation process as well as the recognition that a biopsychosocial approach must be adopted when assessing risk factors, we believe that outcomes should also be assessed from a biopsychosocial perspective. Not addressing the improvement of important factors in each domain might lead to a patient's partial recovery or adjustment and open the way to possible relapse/recurrence and chronicity.

Beyond the gaps in this field of research, the difficulties in identifying a core set of predictors highlights the complex dynamic of MSD and their consequences, and the idiosyncratic interaction between a multitude of yellow, blue, black and red flags. It is possible that certain subgroups of pain patients will show different profiles that will necessitate different intervention strategies to achieve a better outcome. It is important to carry out more research to overcome the heterogeneity of this population and to identify possible clusters of patients at risk for chronic pain and disability, given the potential for an iatrogenic effect of early unnecessary interventions (18) or badly targeted interventions. Furthermore, more biopsychosocial multivariate research on prognostic factors is also needed for patients already in a chronic state. Conversely, the importance of the subjective experience for each individual can't be stressed enough and this implies flexibility, cooperation from all stakeholders, and tolerance of uncertainty on the part of the various professionals who intervene with this population. Adopting a truly biopsychosocial approach that is client-centered should, therefore, emphasize restoring the patient's overall functioning and adjustment to their condition which will likely contribute to a higher QOL, a lower chance of recurrence or chronicity, and sustained work participation.

Références

1. National Research Council (2001). Introduction. In National Research Council (Eds). *Musculoskeletal disorders and the workplace: Low back and upper extremities* (pp. 17-37), Washington, DC: National Academy Press.

2. Coyte, P. C., Asche, C. V., Croxford, R., & Chan, B. (1998). The economic cost of musculoskeletal disorders in Canada. *Arthritis Care & Research*, *11*(5), 315-325.

3. Commission de la Santé et Sécurité du Travail (2003a). *Statistiques sur les lésions en "ites" du système musculo-squelettique : 1999-2002*. Montreal: CSST.

4. Commission de la Santé et Sécurité du Travail (2003b). *Statistiques sur les affections vertébrales : 1999-2002*. Montreal: CSST.

5. World Health Organization (1998). Bone and joint decade 2000-2010. *ACTA Orthopaedics Scandinavia*, *69*, 219-220.

6. Godin, J. F, Baril, R., & Massicotte, P. (2005). *Portrait statistique des travailleurs en réadaptation pour 2001-2002*. Montréal: IRSST.

7. Druss, B. (2002). The most expensive medical conditions in America. *Health Affairs*, *25*(1), 13-21.

8. Feuerstein, M., & Zastowny, T.R. (1996). Multidisciplinary management of work-related musculoskeletal pain and disability. In D. C. Turk, & R. J. Gatchel (eds). *Psychological approaches to pain management: A practitioner's handbook* (458-485). Guilford Press: New-York.

9. Hashemi, L., Webster, B. S., Clancy, E. A., & Volinn, E. (1997). Length of disability and cost of workers' compensation low back pain claims. *Journal of Occupational and Environmental Medicine*, *39*(10), 937-945.

10. Hashemi, L., Webster, B. S., Clancy, E. A., & Courtney, T. K. (1998). Length of disability and cost of work-related musculoskeletal disorders of the upper extremity. *Journal of Occupational and Environmental Medicine*, *40*(3), 261-269.

11. Spitzer, W. O., Leblanc, F. E., & Dupuis, M. (1987). Scientific approach to the assessment and management of activity-related spinal disorders: A monograph for clinicians. Report of the Quebec task force on spinal disorders. *Spine*, *75*(suppl.), 3-59.

12. Wright, A. R., & Gatchel, R. J. (2002). Occupational musculoskeletal pain and disability. In D. C. Turk & R. J. Gatchel (Eds). *Psychological approaches to pain management: A practitioner's handbook* (pp. 349-364). New York, NY: Guilford Press.

13. Gatchel, R. J., Adams, L., Polatin, P. B., & Kishino, N. D. (2002). Secondary loss and pain-associated disability: Theoritical overview and treatment implications. *Journal of Occupational Rehabilitation*, *12*, 99-110.

14. Harris, S., Morley, S., & Barton, S. B. (2003). Role loss and emotional adjustment in chronic pain. *Pain*, *105*, 363-370.

15. Walker, J., Beatrice, S., & Holloway, I. (2006). The experience of chronic pain: accounts of loss in those seeking healp from pain clinics. *European Journal of Pain*, *10*, 199-207.

16. Frank, J. W., Brooker, A.-S., DeMaio, S. E., Kerr, M. S., Maetzel, A., Shannon, H. S., Sullivan, T. J., Norman, R. W., & Wells, R. P. (1996). Disability resulting from occupational low back pain. Part II: What do we know about secondary prevention? A review of the scientific evidence on prevention after disability begins. *Spine*, *21*, 2918-2929.

17. Gatchel, R. J., & Oordt, M. S. (2003). Acute and chronic pain conditions. In R. J. Gatchel & M. S. Oordt (Eds). *Clinical health and psychology and primary care* (pp. 117-134). Washington, DC: APA.

18. Frank, J.W., Sinclair, S., Hogg-Johnson, S., Shannon, H., Bombardier, C., Beaton, D., & Cole, D. (1998). Preventing disability from work-related low-back pain: New evidence gives new hope-if we can just get all the players onside. *Canadian Medical Association Journal*, *158*, 1625-1631.

19. Linton, S. J., Ross, D., Schultz, I. Z., Main, C., Côté, P., Pransky, G., & Johnson, W. (2005). Prognosis and the identification of workers risking disability: Research issues and directions for future research. *Journal of Occupational Rehabilitation*, *15*, 459-474.

20. Turk, D. C. (2000). Are pain syndromes acute or chronic diseases? *Clinical Journal of Pain*, *16*, 279-280.

21. Nielson, W. R., & Mior, S. (2001). Prevention of chronic pain: The unexplored frontier. *Clinical Journal of Pain*, *17*(4), S68-S69.

22. Hestbaek, L., Leboeuf-Yde, C., & Manniche, C. (2003a). Low back pain: What is the long-term course? A review of studies of general patient populations. *European Spine Journal*, *12*, 149-165.

23. Pengel, L. H. M., Herbert, R. D., Maher, C. G., & Refshauge, K. M. (2003). Acute low back pain: A systematic review of its prognosis. *British Medical Journal*, *327*(7410), 323-325.

24. Wasiak, R., Pransky, G., & Webster, B. S. (2003). Methodological challenges in studying recurrence of low back pain. *Journal of Occupational Rehabilitation*, *13*, 21-31.

25. Baldwin, M. L., & Butler, R. J. (2006). Upper extremity disorders in the workplace: Costs and outcomes beyond the first return to work. *Journal of Occupational Rehabilitation*, *16*, 303-323.

26. Cedrashi, C., Robert, J., Goerg, D., Perrin, E., Fisher, W., & Vischer, T. L. (1999). Is chronic non-specific low back pain chronic? Definitions of a problem and problems of a definition. *British Journal of General Practice*, *49*(442), 358-362.

27. Gatchel, R. J., & Gardea, M. A. (1999). Psychosocial issues: Their importance in predicting disability, response to treatment, and search for compensation. *Neurologic Clinics of North America*, *17*(1), 149-166.

28. Waddell, G. (2004) *The back pain revolution* (2nd ed.). United Kingdom: Churchill Livingstone.

29. Feuerstein, M. (1991). A multidisciplinary approach to the prevention, evaluation and management of work disability. *Journal of Occupational Rehabilitation*, *1*(1), 5-12.

30. Gatchel, R. J. (2004a). Comorbidity of chronic pain and mental health disorders: The biopsychosocial perspective. *American Psychologist*, *59*, 792-794.

31. Truchon, M. (2001). Determinants of chronic disability related to low back pain: Towards an integrative biopsychosocial model. *Disability and Rehabilitation*, *23*(17), 758-767.

32. Gatchel, R. J., Pang, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychological Bulletin*, *133*(4), 581-624.

33. Turk, D. C. (1996). Biopsychosocial perspective on chronic pain. In D. C. Turk & R. J. Gatchel (Eds), *Psychological approaches to pain management: A practitioner's handbook* (pp. 3-32). New York, NY: Guilford Press.

34. Waddell, G. (2006). Preventing incapacity in people with musculoskeletal disorders. *British Medical Bulletin*, *77*, 55-69.

35. Linton, S. J. (2000). A review of psychological risk factors in back and neck pain. *Spine*, *25*(9), 1148-1156.

36. Turk, D. C., & Monarch, E. S. (2002). Biopsychosocial perspective on chronic pain. In D.C. Turk & R. J. Gatchel (Eds), *Psychological approaches to pain management: A practitioner's handbook* (2nd ed.) (pp. 3-29). New York, NY: Guilford Press.

37. Kendall, N. A. S., Linton, S. J., & Main, C. J. (1997). *Guide to assessing psychosocial yellow flags in acute low back pain: Risk factors for long term disability and work loss*. Retreived from http://www.nzgg.org.nz/guidelines/0072/acc1038_col.pdf.

38. Gatchel, R. J. (2004b). Musculoskeletal disorders: Primary and secondary interventions. *Journal of Electromyography and Kinesiology*, *14*, 161-170.

39. Borghouts, J. A. J., koes, B. W., & Bouter, L. M. (1998). The clinical course and prognostic factors of non-specific neck pain: A systematic review. *Pain*, *77*, 1-13.

40. Crook, J., Milner, R., Schultz, I. Z., & Stringer, B. (2002). Determinants of occupational disability following a low back injury: A critical review of the literature. *Journal of Occupational Rehabilitation*, *12*(4), 277-295.

41. Hartvigsen, J., Lings, S., Leboeuf-Yde, C., & Bakketeig, L. (2003). Psychosocial factors at work in relation to low back pain and consequences of low back pain: A systematic, critical review of prospective cohort studies. *Occupational and Environmental Medicine*, *61*(1), e2.

42. Iles, R. A., Davidson, M., & Taylor, N. F. (2008). Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: A systematic review. *Occupational and Environmental Medicine*, *65*, 507-517.

43. Kent, P. M., & Keating, J. L. (2008). Can we predict poor recovery from recent-onset non-specific low back pain? A systematic review. *Annual Therapy*, *13*, 12-28.

44. Kuijer, W., Groothoff, J. W., Brouwer, S., Geertzen, J. H. B., & Dijkstra, P. U. (2006). Prediction of sickness absence in patients with chronic low back pain: A systematic review. *Journal of Occupational Rehabilitation*, *16*, 439-467.

45. Kuijpers, T., Van der Windt, D. A. W. M., Van der Heijden, G. J. M. G., & Bouter, L. M. (2004). Systematic review of prognostic cohort studies on shoulder disorders. *Pain*, *109*, 420-431.

46. Linton, S. J. (2001). Occupational psychological factors increase the risk for back pain: A systematic review. *Journal of Occupational Rehabilitation*, *11*(1), 53-66.

47. Mallen, C., Peat, G., Thomas, E., Dunn, K. M., & Croft, P. (2007). Prognostic factors for musculoskeletal pain in primary care: A systematic review. *British Journal of General Practice*, *57*, 655-661

48. McIntosh, G., Frank, J., Hogg-Johnson, S., Hamilton, H., & Bombardier, C. (2000b). Low back pain prognosis: Structured review of the literature. *Journal of Occupational Rehabilitation*, *10*(2), 101-115.

49. Pincus, T., Burton, A. K., Vogel, S., & Field, A. P. (2002). A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, *27*(5), E109-E120.

50. Selander, J., Marnetoft, S. U., Bergroth, A., & Ekholm, J. (2002). Return to work following vocational rehabilitation or neck, back and shoulder problems: Risk factors reviewed. *Disability and Rehabilitation*, *24*(14), 704-712.

51. Shaw, W. S., Pransky, G., & Fitzgerald, T. E. (2001). Early prognosis for low back disability: Intervention strategies for health care providers. *Disability and Rehabilitation*, *23*(18), 815-828.

52. Steenstra, I. A., Verbeek, J. H., Heymans, M. W., & Bongers, P. M. (2005b). Prognostic factors for duration of sick leave in patients sick listed with acute low back pain: A systematic review of the literature. *Occupational and Environmental Medicine*, *62*, 851-860.

53. Truchon, M., & Fillion, L. (2000). Biopsychosocial determinants of chronic disability and low-back pain: A review. *Journal of Occupational Rehabilitation*, *10*(2), 117-142.

54. Turner, J. A., Franklin, G., & Turk, D. C. (2000). Predictors of chronic disability in injured workers: A systematic literature synthesis. *American Journal of Industrial Medicine*, *38*, 707-722.

55. Altman, D. G. (2001). Systematic reviews of evaluations of prognosis variables. *British Medical Journal*, *323*, 224-228.

56. Krause, N., Frank, J. W., Dasinger, L. K., Sullivan, T. J., & Sinclair, S. J. (2001b). Determinants of duration of disability and return to work after work-related injury and illness: Challenges for future research. *American Journal of Industrial Medicine*, *40*, 464-484.

57. Suls, J., & Rothman, A. (2004). Evolution of the biopsychosocial model: Prospects and challenges for health psychology. *Health psychology*, *23*(2), 119-125.

58. Croft, P., Lewis, M., & Hannaford, P. (2003). Is all chronic pain the same? A 25 year follow-up study. *Pain*, *105*(1-2), 309-317.

59. Krause, N., Dasinger, L. K., Deegan, L. J., Rudolph, L., & Brand, R. J. (2001a). Psychosocial job factors and return to work after compensated low back injury: A disability phase-specific analysis. *American Journal of Industrial Medicine*, *40*, 374-392.

60. Mallen, C., Peat, G., & Croft, P. (2006). Quality assessment of observational studies is not common place in systematic reviews. *Journal of Clinical Epidemiology*, *59*, 765-769.

61. Hoogendoorn, W. E., van Poppel, M. N. M., Bongers, P. M., Koes, B. W., & Bouter, L. M. (2000). Systematic review of psychosocial factors at work and private life as risk factors for back pain. *Spine*, *25*(16), 2114-2125.

62. Hayden, J. A., Côté, P., & Bombardier, C. (2006). Evaluation of the quality of prognosis studies in systematic reviews. *Annals of Internal Medicine*, *144*(6), 427-437.

63. Franche, R. L., Cullen, K., Clarke, J., Irvin, E., Sinclair, S., Frank, J., & IWH. (2005). Workplace-based return-to-work interventions: A systematic review of the quantitative literature. *Journal of Occupational Rehabilitation*, *15*(4), 607-631.

64. Slavin, R. E. (1986). Best-evidence synthesis: An alternative to meta-analytic and traditional reviews. *Educational Researcher*, *15*(5), 5-11.

65. Slavin, R. E. (1995). Best evidence synthesis: An intelligent alternative to meta-analysis. *Journal of Clinical Epidemiology*, *48*(1), 9-18.

66. Abenhaim, L., Suissa, S., & Rossignol, M. (1988). Risk of occupational back pain over three year follow up. *British Journal of Industrial Medicine*, *45*, 829-833.

67. Abenhaim, L., Rossignol, M., Gobeille, D., Bonvalot, Y., Fines, P., & Scott, S. (1995). The prognosis consequences in the making of the initial medical diagnosis of work-related back injuries. *Spine*, *20*(7), 791-795.

68. Atlas, S. J., Chang, Y., Kammann, E., Keller, R. B., Deyo, R. A., & Singer, D. E. (2000). Long-term disability and return to work among patients who have a herniated lumbar disc: The effect of disability compensation. *The Journal of Bone and Joint Surgery, 82*(1), 4-15.

69. Boersma, K., & Linton, S. J. (2006). Expectancy, fear and pain in the prediction of chronic pain and disability: A prospective analysis. *European Journal of Pain, 10*, 551-557.

70. Borg, K., Hensing, G., & Alexanderson, K. (2004). Risk factors for disability pension over 11 years in a cohort of young persons initially sick-listed with low back, neck, or shoulders diagnoses. *Scandinavian Journal of Public Health*, *32*, 272-278.

71. Bot, S. D. M., van der Waal, J. M., Terwee, C. B., van der Windt, D. A. W. M., Bouter, L. M., & Dekker, J. (2005a). Course and prognosis of elbow complaints: A cohort study in general practice. *Annals of the Rheumatic Diseases, 64*, 1331-1336.

72. Bot, S. D. M., van der Waal, J. M., Terwee, C. B., van der Windt, D. A. W. M., Scholten, R. J. P. M., Bouter, L. M., & Dekker, J. (2005b). Predictors of outcome in neck and shoulder symptoms. A cohort study in general practice. *Spine, 30*(16), E459-E470.

73. Burton, K., Polatin, P. B., & Gatchel, R. J. (1997). Psychosocial Factors and the Rehabilitation of patients with chronic work-related upper extremity disorders. *Journal of Occupational Rehabilitation*, *7*(3), 139-153.

74. Burton, A. K., & Tillotson, K. M. (1991). Prediction of the clinical course of low-back trouble using multivariable models. *Spine, 16*(1), 7-14.

75. Burton, A. K., Tillotson, K. M., Main, C. J., & Hollis, S. (1995). Psychosocial predictors of outcome in acute and subchronic low back trouble. *Spine, 20*(6), 722-728.

76. Bush, H., Goransson, S., & Melin, B. (2007). Self-efficacy beliefs predict sustained long-term sick absenteeism in individuals with chronic musculoskeletal pain. *Pain Practice, 7*(3), 234-240.

77. Carey, T. S., Mills, G. J., & Jackman, A. M. (2000). Beyond the good prognosis. examination of an inception cohort of patients with chronic low back pain. *Spine, 25*(1), 115-120.

78. Cats-Baril, W. L., & Frymoyer, J. W. (1991). Identifying patients at risk of becoming disabled because of low-back pain. The Vermont Rehabilitation Engineering Center Predictive Model. *Spine, 16*(6), 605-607.

79. Cherkin, D. C., Deyo, R. A., Street, J. H., & Barlow, W. (1996). Predicting poor outcomes for back pain seen in primary care using patients' own criteria. *Spine, 21*(24), 2900-2907.

80. Cole, D. C., Mondloch, M. V., & Hogg-Johnson, S. (2002). Listening to injured workers: How recovery expectations predict outcomes - a prospective study. *Canadian Medical Association Journal, 166*(6), 749-754.

81. Coste, J., Delecoeuillerie, G., Cohen de Lara, A., LeParc, J. M., & Paolaggi, J. B. (1994). Clinical course and prognostic factors in acute low back pain: An inception cohort study in primary care practice. *British Medical Journal*, *308*, 577-580.

82. Crook, J., Moldofsky, H., & Shannon, H. (1998). Determinants of disability after a work related musculoskeletal injury. *The Journal of Rheumatology, 25*(8), 1570-1577.

83. Deyo, R. A., & Diehl, A. K. (1988). Psychosocial predictors of disability in patients with low back pain. *The Journal of Rheumatology, 15*(10), 1557-1564.

84. Dionne, C. E., Bourbonnais, R., Fremont, P., Rossignol, M., Stock, S. R., Nouwen, A., Larocque, I., & Demers, E. (2007). Determinants of "return to work in good health" among workers with back pain who consult in primary care settings: A 2-year prospective study. *European Spine Journal, 16*, 641-655.

85. Dionne, C., Koepsell, T. D., Von Korff, M., Deyo, R. A., Barlow, W. E., & Checkoway, H. (1995). Formal education and back-related disability - In search of an explanation. *Spine, 20*(24), 2721-2730.

86. Dionne, C., Koepsell, T. D., Von Korff, M., Deyo, R. A., Barlow, W. E., & Checkoway, H. (1997). Predicting long-term functional limitations among back pain patients in primary care settings. *Journal of Clinical Epidemiology, 50*(1), 31-43.

87. Dozois, D. J. A., Dobson, K. S., Wong, M., Hughes, D., & Long, A. (1995). Factors associated with rehabilitation outcome in patients with low back pain (LBP): Prediction of employment outcome at 9-month follow-up. *Rehabilitation Psychology*, *40*(4), 243-259.

88. Engel, C. C., Von Korff, M., & Katon, W. J. (1996). Back pain in primary care: Predictors of high health-care costs. *Pain, 65*, 197-204.

89. Enthoven, P., Skargren, E., Carstensen, J., & Oberg, B. (2006). Predictive factors for 1-year and 5-year outcome for disability in a working population of patients with low back pain treated in primary care. *Pain, 122*, 137-144.

90. Epping-Jordan, J. E., Williams, R. A., Pruitt, S. D., Patterson, T. L., Grant, I., Wahlgren, D. R., Slater, M. A., Webster, J. S., & Atkinson, J. H. (1998). Transition to chronic pain in men with low back pain: Predictive relationships among pain intensity, disability, and depressive symptoms. *Health Psychology, 17*(5), 421-427.

91. Ericsson, M., Poston, W. S. C., Linder, J., Taylor, J. E., Haddock, C. K. & Foreyt, J. P. (2002). Depression predicts disability in long-term chronic pain patients. *Disability and Rehabilitation, 24*(6), 334-340

92. Estlander, A. M., Takala, E. P., & Viikari-Juntura, E. (1998). Do psychological factors predict changes in musculoskeletal pain? A prospective, two-year follow-up study of a working population. *Journal of Occupational and Envionmental Medicine*, *40*, 445-453.

93. Faber, E., Burdorf, A., Bierma-Zeinstra, S. M. A., Miedema, H. S., & Koes, B. W. (2006). Determinants for improvement in different back pain measures and their influence on the duration of sickness absence. *Spine, 31*(13), 1477-1483.

94. Feleus, A., Bierma-Zeinstra, S. M. A., Miedema, H. S., Verhagen, A. P., Nauta, A. P., Burdorf, A., Verhaar, J. A. N., & Koes, B. W. (2007). Prognostic indicators for non-recovery of non-traumatic complaints at arm, neck and shoulder in general practice - 6 months follow-up. *Rheumatology. 46*, 169-176.

95. Fishbain, D. A., Cutler, R. B., Rosomoff, H. L., Khalil, T., & Steel-Rosomoff, R. N. (1997). Impact of chronic pain patient's job perception variables on actual return-to-work. *Clinical Journal of Pain*, *13*, 197-206.

96. Fransen, M., Woodward, M., Norton, R., Coggan, C., Dawe, M., & Sheridan, N. (2002). Risk factors associated with the transition from acute to chronic occupational back pain. *Spine, 27*(1), 92-98.

97. Gallagher, R. M., Rauh, V., Haugh, L. D., Milhous, R., Callas, P. W., Langelier, R., McClallen, J. M., & Frymoyer, J. (1989). Determinants of return-to-work among low back pain patients. *Pain, 39*, 55-67.

98. Gallagher, R. M., Williams, R. A., Skelly, J., Haugh, L. D., Rauh, V., Milhous, R., & Frymoyer, J. (1995). Workers' Compensation and return-to-work in low back pain. *Pain, 61*, 299-307.

99. Gatchel, R. J., Polatin, P. B., & Mayer, T. G. (1995a). The dominant role of psychosocial risk factors in the development of chronic low back pain disability. *Spine, 20*, 2702-2709.

100. Gatchel, R. J., Polatin, P. B., & Kinney, R. K. (1995b). Predicting outcome of chronic back pain using clinical predictors of psychopathology: A prospective analysis. *Health Psychology*, *14*(5), 415-420.

101. Gauthier, N., Sullivan, M. J. L., Adams, H., Stanish, W. D., & Thibault, P. (2006). Investigating risk factors for chronicity: The importance of distinguishing between return-to-work status and self-report measures of disability. *Journal of Occupational and Environmental Medicine*, *48*(3), 312-318.

102. Grooten, W., & Johannes, A. (2007a). Predictors for persistent neck/shoulder pain, medical care-seeking due to neck/shoulder pain and sickness absence. *Clinical Rehabilitation, 21*, 648-659.

103. Grooten, W., Johannes A., Mulder, M., Josephson, M., Alfredsson, L., & Wiktorin, C. (2007b). The influence of work-related exposures on the prognosis of neck/shoulder pain. *European Spine Journal, 16*, 2083-2091.

104. Gross, D. P., & Battie, M. C. (2006). Does functional capacity evaluation predict recovery in workers' compensation claimants with upper extremity disorders? *Occupational and Environmental Medicine, 63*, 404-410.

105. Gross, D. P., & Battie, M. C. (2005a). Work-related recovery expectations and the prognosis of chronic low back pain within a workers' compensation setting. *Journal of Occupational and Environmental Medicine*, *47*(4), 428-433.

106. Gross, D. P., & Battie, M. C. (2005b). Functional capacity evaluation performance does not predict sustained return to work in claimants with chronic back pain. *Journal of Occupational Rehabilitation, 15*(3), *285-294.*

107. Grotle, M., Brox, J. I., Veierod, M. B., Glomsrod, B., Lonn, J. H. & Vollestad, N. K. (2005). Clinical course and prognostic factor in acute low back pain. *Spine*, *30*(8), 976-982.

108. Grotle, M., Brox, J. I., Glomsrod, B., Lonn, J. H., & Vollestad, N. K. (2007). Prognostic factors in first-time care seekers due to acute low back pain. *European Journal of Pain, 11*, 290-298.

109. Haldorsen, E., Indahl, A., & Ursin, H. (1998). Patients with low back pain not returning to work: A 12-month follow-up study. *Spine, 23*(11), 1202-1207.

110. Hankin, H. A., & Killian, C. B. (2004). Prediction of functional outcomes in patients with chronic pain. *Work, 22*, 125-130.

111. Härkäpää, K. (1992). Psychosocial factors as predictors for early retirement in patients with chronic low back pain. *Journal of Psychosomatic Research, 36*(6), 553-559.

112. Härkäpää, K., Jarvikoski, A., Mellin, G., Hurri, H., & Luoma, J. (1991). Helath locus of control beliefs and psychological distress as predictors for treatment outcome in low-back pain patients: Results of a 3-month follow-up of a controlled interventions study. *Pain*, *46*, 35-41.

113. Heneweer, H., Aufdemkampe, G., van Tulder, M. W., Kiers, H., Stappaerts, K. H., & Vanhees, L. (2007). Psychosocial variables in patients with (sub) acute low back pain. An inception cohort in primary care physical therapy in the Netherlands. *Spine, 32*(5), 586-592.

114. Hewitt, J. A., Hush, J. M., Martin, M. H., Herbert, R. D., & Latimer, J. (2007). Clinical prediction rules can be derived and validated for injured Australian workers with persistent musculoskeletal pain: An observational study. *Australian Journal of Physiotherapy, 53*, 269-276.

115. Heymans, M. W., de Vet H. C. W., Knol, D. L., Bongers, P. M., Koes, B. W. & van Mechelen, W. (2006). Workers' beliefs and expectations affect return over 12 months. *Journal of Occupational Rehabilitation, 16*, 685-695.

116. Hill, J., Lewis, M., Papageorgiou, A. C., Dziedzic, K., & Croft, P. (2004). Predicting persistent neck pain. A 1-year follow-up of a population cohort. *Spine, 29*(15), 1648-1654.

117. Hogg-Johnson, S., & Cole, D. C. (2003). Early prognostic factors for duration on temporary total benefits in the first year among workers with compensated occupational soft tissue injuries. *Occupational and Environmental Medicine, 60*, 244-253.

118. Hoving, J. L., de Vet, H. C. W., Twisk, J. W. R., Deville, W. L. J. M., van der Windt, D., Koes, B. W., & Bouter, L. M. (2004). Prognostic factors for neck pain in general practice. *Pain*, *110*, 639-645.

119. Hunt, D. G., Zuberbier, O., Kozlowski, A. J., Berkowitz, J., Schultz, I. Z., Milner, R. A., Crook, J. M., & Turk, D. C. (2002). Are components of a comprehensive medical assessment predictive of work disability after an episode of occupational low back trouble? *Spine, 27*(23), 2715-2719.

120. Hunter, S. J., Shaha, S., Flint, D., & Tracy, D. M. (1998). Predicting return to work: A long-term follow-up study of railroad workers after low back injuries. *Spine, 23*(21), 2319-2328.

121. Infante-Rivard, C., & Lortie, M. (1996). Prognostic factors for return to work after a first compensated episode of back pain. *Occupational and Environmental Medicine*, *53*, 488-494.

122. Infante-Rivard, C., & Lortie, M. (1997). Relapse and short sickness absence for back pain in the six months after return to work. *Occupational and Environmental Medicine*, *54,* 328-334.

123. Jones, G. T., Johnson, R. E., Wiles, N. J., Chaddock, C., Potter, R. G., Roberts, C., Symmons, D. P. M., & Macfarlane, G. J. (2006). Predicting persistent disabling low back pain in general practice: A prospective cohort study. *British Journal of General Practice*, *56*, 334-341.

124. Karels, C. H., Bierma-Zeinstra, S. M. A., Burdorf, A., Verhagen, A. P., Nauta, A. P., & Koes, B. W. (2007). Social and psychological factors influenced the course of arm, neck and shoulder complaints. *Journal of Clinical Epidemiology, 60*, 839-848.

125. Karjalainen, K., Malmivaara, A., Mutanen, P., Pohjolainen, T., Roine, R., & Hurri, H. (2003). Outcome determinants of subacute low back pain. *Spine*, *28*(23), 2634-2640.

126. Klenerman, L., Slade, P. D., Stanley, I. M., Pennie, B., Reilly, J. P., Atchinson, L. E., Troup, J. D. G., & Rose, M. J. (1995). The prediction of chronicity in patients with and acute attack of low back pain in a general practice setting. *Spine, 20*(4), 478-484.

127. Koleck, M., Mazaux, J. M., Rascle, N., & Bruchon-Schweitzer, M. (2006). Psycho-social factors and coping strategies as predictors of chronic evolution and quality of life in patients with low back pain: A prospective study. *European Journal of Pain, 10*, 1-11.

128. Kool, J. P., Oesch, P. R., & de Bie, R. A. (2002). Predictive tests for non-return to work in patients with chronic low back pain. *European Spine Journal, 11*, 258-266.

129. Kovacs, F. M., Abraira, V., Zamora, J., & Fernandez, C. (2005). The transition from acute to subactute and chronic low back pain. A study based on determinant of quality of life and prediction of chronic disability. *Spine, 30*(15), 1786-1792.

130. Kuijpers, T., van der Windt, D. A. W. M., Boeke, A. J. P., Twisk, J. W. R., Vergouwe, Y., Bouter, L. M., & van der Heijden, G. J. M. G. (2006). Clinical prediction rules for the prognosis of shoulder pain in general practice. *Pain, 120*, 276-285.

131. Lancourt, J., & Kettelhut, M. (1992). Predicting return to work for lower back Pain patients receiving worker's compensation. *Spine, 17*(6), 629-640.

132. Lanier, D. C., & Stockton, P. (1988). Clinical predictors of outcome of acute episodes of low back pain. *The Journal of Family Practice, 27*(5), 483-489.

133. Leroux, I., Dionne, C. E., & Bourbonnais, R. (2004). Psychosocial job factors and the one-year evolution of back-related functional limitations. *Scandinavian Journal of Work Environment and Health, 30*(1), 47-55.

134. Linton, S. J., & Hallden, K. (1998). Can we screen for problematic back pain? A screening questionnaire for predicting outcome in acute and subacute back pain. *The Clinical Journal of Pain*, *14*(3), 209-215.

135. Lotters, F., & Burdorf, A. (2006a). Prognostic factors for duration of sickness absence due to musculoskeletal disorders. *Clinical Journal of Pain, 22*(2), 212-221.

136. Lotters, F., Franche, R.-L., Hogg-Johnson, S., Burdorf, A., & Pole, J. D. (2006b). The prognostic value of depressive symptoms, fear-avoidance, and self-efficacy for duration of lost-time benefits in workers with musculoskeletal disorders. *Occupational and Environmental Medicine*, *63*, 794-801.

137. MacDermid, J. C., Donner, A., Richards, R. S., & Roth, J. H. (2002). Patient versus injury factors as predictors of pain and disability six months after a distal radius fracture. *Journal of Clinical Epidemiology, 55*, 849-854.

138. MacDermid, J. C., Roth, J. H., & McMurtry, R. (2007). Predictors of time lost from work following a distal radius fracture. *Journal of Occupational Rehabilitaton, 17*, 47-62.

139. Macfarlane, G. J., Thomas, E., Croft, P. R., Papageorgiou, A. C., Jayson, M. I. V. & Silman, A. J. (1999). Predictors of early improvement in low back pain amongst consulters to general practice: The influence of pre-morbid and episode-related factors. *Pain*, *80*, 113-119.

140. McIntosh, G., Frank, J., Hogg-Johnson, S., Bombardier, C., & Hamilton, H. (2000a). Prognostic factors for time receiving workers' compensation benefits in a cohort of patients with low back pain. *Spine, 25*(2), 147-157.

141. Miranda, H., Viikari-Juntura, E., Martikainen, R., & Riihimaki, H. (2002). A prospective study on knee pain and its risk factors. *Osteoarthritis and Cartilage*, *10*, 623-630.

142. Miranda, H., Viikari-Juntura, E., Martikainen, R., Takala, E.-P., & Riihimaki, H. (2001). A prospective study of work related factors and physical exercise as predictors of shoulder pain. *Occupational and Environental Medicine*, *58*, 528-534.

143. Ohlund, C., Lindstrom, I., Eek, C., Areskoug, B., & Nachemson, A. (1996). The causality field (extrinsic and intrinsic factors) in industrial subacute low back pain patients. *Scandinavian Journal of Medicine & Science in Sports*, *6*, 98-11.

144. Oleinick, A., Gluck, J. V., & Guire, K. E. (1996). Factors affecting first return to work following a compensable occupational back injury. *American Journal of Industrial Medicine*, *30*, 540-555.

145. Reiso, H., Nygard, J. F., Jorgensen, G. S., Holanger, R., Soldal, D., & Bruusgaard, D. (2003). Back to work: *Predictors of return to work among patients with back disorders certified as sick. Spine, 28*(13), 1468-1474.

146. Rossignol, M., Suissa, S., & Abenhaim, L. (1988). Working disability due to occupational back pain: Three-year follow-up of 2 300 compensated workers in Quebec. *Journal of Occupational Medicine, 30*(6), 502-505.

147. Sandstrom, J., & Esbjornsson, E. (1986). Return to work after rehabilitation. The significance of the patient's own prediction. *Scandinavian Journal of Rehabilitation Medicine, 18*, 29-33.

148. Schiottz-Christensen, B., Neilsen, L., Hansen, V. K., Schodt, T., Toft, S., & Henrick, O. F. (1999). Long-term prognosis of acute low back pain in patients seen in general practice: A 1-year prospective follow-up study. *Family Practice, 16*(3), 223-232

149. Schultz, I. Z., Crook, J. M., Berkowitz, J., Meloche, G. R., Milner, R., Zuberbier, O. A. & Meloche, W. (2002). Biopsychosocial multivariate predictive model of occupational low back disability. *Spine, 27*(23), 2720-2725.

150. Schultz, I. Z., Crook, J., Meloche, G. R., Berkowitz, J., Milner, R., Zuberbier, O. A., Meloche, W. (2004). Psychosocial factors predictive of occupational low-back disability: Towards development of a return-to-work model. *Pain, 107*, 77-85.

151. Sieben, J. M., Vlaeyen, J. W. S., Portegijs, P. J. M., Verbunt, J. A., van Riet-Rutgers, S., Kester, A. D. M., Von Korff, M., Arntz, A., & Knottnerus, J. A. (2005). A longitudinal study on the predictive validity of the fear-avoidance model in low back pain. *Pain, 117*, 162-170.

152. Singer, J., Gilbert, J. R., Hutton, T., & Taylor, D. W. (1987). Predicting outcome in acute low-back pain. *Canadian Family Physician, 33*, 655-658.

153. Smidt, N., Lewis, M., van der Windt, D. A. W. M., Hay, E. M., Bouter, L. M., & Croft, P. (2006). Lateral epicondylitis in general practice: Course and prognostic indicators of outcome. *The Journal of Rheumatology, 33*(10), 2053-2059.

154. Soucy, I., Truchon, M., & Cote, D. (2006). Work-related factors contributing to chronic disability in low back pain. *Work, 26*, 313-326.

155. Steenstra, I. A., Koopman, F. S., Knol, D. L., Kat, E., Bongers, P. M., de Vet, H. C. W., & van Mechelen, W. (2005a). Prognostic factors for duration of sick leave due to low-back in Dutch health care professionals. *Journal of Occupational Rehabilitation, 15*(4), 591-605.

156. Storheim, K., Brox, J. I., Holm, I., & Bo, K. (2005). Predictors of return to work in patients sick listed for sub-acute low back pain: A 12-month follow-up study. *Journal of Rehabilitation Medicine*, *37*, 365-371.

157. Swinkels-Meewisse, I. E. J., Roelofs, J., Schouten, E. G. W., Verbeek, A. L. M., Oostendorp, R. A. B., & Vlaeyen, J. W. S. (2006). Fear of movement/(re) injury predicting chronic disabling low back pain: A prospective inception cohort study. *Spine, 31*(6), 658-664.

158. Tate, R. B., Yassi, A., & Cooper, J. (1999). Predictors of time loss after back injury in nurses. *Spine, 24*(18), 1930-1936.

159. Thomas, E., Silman, A. J., Croft, P. R., Papageorgiou, A. C., Jayson, M. I. V., & Macfarlane, G. J. (1999). Predicting who develops chronic low back pain in primary care: A prospective study. *British Medical Journal, 318*, 1662-1667.

160. Turner, J. A., Franklin, G., Fulton-Kehoe, D., Sheppard, L., Wickizer, T. M., Wu, R., Gluck, J. V., Egan, K., & Stover, B. (2007). Early predictors of chronic work disability associated with carpal tunnel syndrome: A longitudinal workers' compensation cohort study. *American Journal of Industrial Medicine, 50*, 489-500.

161. Turner, J. A., Franklin, G., Fulton-Kehoe, D., Sheppard, L., Wickizer, T. M., Wu, R., Gluck, J. V., & Egan, K. (2006). Worker recovery expectations and fear-avoidance predict work disability in a population-based workers' compensation back pain sample. *Spine, 31*(6), 682-689.

162. van den Heuvel, S. G., Ariens, G. A. M., Boshuizen, H. C., Hoogendoorn, W. E., & Bongers, P.M. (2004). Prognostic factors related to recurrent low-back pain and sickness absence. *Scandinavian Journal of Work Environment and Health, 30*(6), 459-467.

163. van den Hoogen, H. J. M., Koes, B. W., Deville, W., van Eijk, J. T. M. & Bouter, L. M. (1997). The prognosis of low back pain in general practice. *Spine, 22*(13), 1515-1521.

164. van der Giezen, A. M., Bouter, L. M., & Nijhuis, F. J. N. (2000). Prediction of return to work of low back pain patients sicklisted for 3-4 months. *Pain, 87*, 285-294.

165. van der Waal, J. M., Bot, S. D. M., Terwee, C. B., van der Windt, D. A. W. M., Scholten, R. J. P. M., Bouter, L. M., & Dekker, J. (2005). Course and prognosis of knee complaints in general practice. *Arthritis & Rheumatism (Arthritis Care & Research), 53*(6), 920-930.

166. van der Weide, W. E., Verbeek, J. H., Salle, H. J A., & van Dijk, F. J. H. (1999). Prognostic factors for chronic disability from acute low-back pain in occupational health care. *Scandinavian Journal of Work and Environmental Health, 25*(1), 50-56.

167. van der Windt, D. A. W. M., Koes, B. W., Boeke, A. P., Deville, W., De Jong, B. A., & Bouter, L. M. (1996). Shoulder disorders in general practice: Prognostic indicators of outcome. *British Journal of General Practice, 46*, 519-523.

168. van der Windt, D. A. W. M., Kuijpers, T., Jellema, P., van der Heijden, G. J. M. G., & Bouter, L. M. (2007). Do psychological factors predict outcome in both low-back pain and shoulder pain? *Annals of Rheumatic Disease*, *66*, 313-319.

169. Von Korff, M., Deyo, R. A., Cherkin, D., & Barlow, W. (1993). Back pain in primary care. Outcome at 1 year. *Spine, 18*(7), 855-862.

170. Williams, R. A., Pruitt, S. D., Doctor, J. N., Epping-Jordan, J. E., Wahlgren, D. R., Grant, I., Patterson, T. L., Webster, J. S., Slater, M.A., & Atkinson, J. H. (1998). The contribution of job satisfaction to the transition from acute to chronic low back pain. *Archives of Physical Medicine and Rehabilitation, 79*, 366-374.

171. Mondloch, M. V., Cole, D. C., & Frank, J. W. (2001). Does how you do depend on how you think you'll do? A systematic review of the evidence for a relation between patient's recovery expectations and health outcomes. *Canadian Medical Association Journal*, *175*(2), 174-179.

172. Holm, L. W., Carroll, L. J., Cassidy, D., Skillgate, E., & Ahlbom, A. (2008). Expectations for recovery important in the prognosis of whiplash injuries. *PLOS Medicine*, *5*(5), 760-767.

173. Krause, N., Dasinger, L. K., & Neuhauser, F. (1998). Modified work and return to work: A review of the literature. *Journal of Occupational Rehabilitation*, *8*(2), 113-139.

174. William, R. M., Wetmorland, M., Schmuck, G., & Creen, M. (2006). A systematic review of workplace rehabilitation interventions for work-related low back pain. *International Journal of Disability Management Research*, *1*(1), 21-30.

175. Ptacek, J. T., & Pierce, G. R. (2003). Issues in the study of stress and coping in rehabilitation setting. *Rehabilitation Psychology*, *48*(2), 113-124.

176. Endler, N. S., Corace, K. M., Summerfeldt, L. J., Johnson, J. M., & Rothbart, P. (2003). Coping with chronic pain. *Personality and Individual Differences*, *34*, 323-346.

177. Lightsey, O. R., Wells, A. W., Wang, M. C., Pietruszka, T., Ciftci, A., & Stancil, B. (2009). Avoidance coping, and fear of pain as mediators of the relationship between positive affect, negative affect, and pain-related distress among African American and Caucasian college women. *The Counseling Psychologist*, *37*(1), 116-146.

178. Ramjeet, J., Smith, J., & Adams, M. (2008). The relationship between coping and psychological and physical adjustment in rheumatoid arthritis: A literature review. *Journal of Clinical Nursing*, *17*, 418–428.

179. Dennison, L., Moss-Morris, R., & Chalder, T. (2009). A review of psychological correlates of adjustment in patients with multiple sclerosis. *Clinical Psychology Review*, *29*, 141–153.

180. Horgan, O., & MacLachlan, M. (2004). Psychosocial adjustment to lower-limb amputation: A review. *Disability and Rehabilitation*, *26*(14/15), 837-850.

181. De Gucht, V., & Fischler, B. (2002). Somatization: A critical review of conceptual and methodological issues. *Psychosomatics*, *43*, 1-9.

182. Ursin, H. (1997). Sensitization, somatization and subjective health complaints. *International Journal of Behavioural Medicine*, *4*, 105-116.

183. Sharpe, M., & Carson, A. (2001). "Unexplained" somatic symptoms, functional syndromes and somatization: Do we need a paradigm shift? *Annals of Internal Medicine*, *134*, 926-930.

184. Palmer, K. T., Calnan, M., Wainwright, D., Poole, J., O'Neill, C., Winterbottom, A., Watkins, C., & Coggon, D. (2005). Disabling musculoskeletal pain and its relation to somatization: A community-based postal survey. *Occupational Medicine*, *55*, 612-617.

185. Carnes, D., Parsons, S., Ashby, D., Breen, A., Foster, N. E., Pincus, T., Voge, S., & Underwood, M. (2007). Chronic musculoskeletal pain rarely presents in a single body site: Results from a UK population study. *Rheumatology*, *46*, 1168-1170.

186. Ijzelenberg, W., & Burdoff, A. (2004). Impact of musculoskeletal co-morbidity of neck and upper extremities on health care utilisation and sickness absence for low back pain. *Occupational and Environmental Medicine*, *61*, 806-810.

187. Kamaleri, Y., Natvig, B., Ihlebaek, C. M., & Bruusgaard, D. (2008). Localized or widespread musculoskeletal pain: Does it matter? *Pain*, *138*, 41-46.

188. Mayer, T. G., Towns, B. L., Nelett, R., Theodore, B. R., & Gatchel, R. J. (2008). Chronic widespread pain in patients with occupational spinal disorders. Prevalence, psychiatric comorbidity and association with outcome. *Spine*, *33* (17), 1889-1897.

189. Natvig, B., Bruusgaard, D., & Eriksen, W. (2001). Localized low back pain and low back pain as part of widespread musculoskeletal pain: Two different disorders? A cross-sectional population study. *Journal of Rehabilitation Medicine*, *33*, 21-25.

190. Hestbaek, L., Leboeuf-Yde, C., & Manniche, C. (2003b). Is low back pain part of a general health pattern or is it a separate and distinctive entity? A critical literature review of comorbidity with low back pain. *Journal of Manipulative and Physiological Therapeutics*, *26*(4), 243-252.

191. Schneider, S., Mohnen, S. M., Schiltenwolf, M., & Rau, C. (2007). Comorbidity of low back pain: Representative outcomes of a national health study in the federal republic of Germany. *European Journal of Pain*, *11*, 387-397.

192. Von Korff, M., Crane, P., Lane, M., Miglioretti, D. L., Simon, G., Saunders, K., Stang, P., Brandenburg, N., & Kessler, R. (2005). Chronic spinal pain and physical-mental comorbidity in the United States: Results from the national comorbidity survey replication. *Pain*, *113*, 331-339.

193. Kamaleri, Y., Natvig, B., Ihlebaek, C. M., Saltyte Benth, J., & Bruusgaard, D. (2009). Change in the number of muscloskeletal pain site: A 14-year prospective study. *Pain*, *141*, 25-30.

194. Dunn, K. M. & Croft, P. R. (2006). The importance of symptom duration in determining prognosis. *Pain*, *121*, 126-132.

195. Gatchel, R. J., & Dersh, J. (2002). Psychological disorders and chronic pain: Are there cause-and-effect relationships? In D. C. Turk. & R. J. Gatchel (eds). *Psychological approaches to pain management: A practitioner's handbook* (pp.30-51). New York, NY: Guilford Press.

196. Fuhrer, M. J. (2000). Subjectifying quality of life as a medical rehabilitation outcome. *Disability and Rehabilitation*, *22*, 481-489.

197. Schultz, I. Z., Stowell, A. W., Feuerstein, M., & Gatchel, R. J. (2007). Models of return to work for musculoskeletal disorders. *Journal of Occupational Rehabilitation*, *17*, 327-352.

198. Bultmann, U., Franche, R.-L., Hogg-Johnson, S., Côté, P., Lee, H., Severin, C., Vidmar, M., & Carnide, N. (2007). Health status, work limitations, and return-to-work trajectories in injured workers with musculoskeletal disorders. *Quality of Life Research*, *16*(7), 1167-1178.

199. Côté, P., Baldwin, M. L., Johnson, W. G., Frank, J. W., & Butler, R. J. (2008). Patterns of sick-leave and health outcomes in injured workers with back pain. *European Spine Journal*, *17*, 484-493.

200. Wasiak, R., JaeYoung, K., & Pransky, G. (2006). Work disability and cost caused by recurrence of low back pain: Longer and more costly than in first episodes. *Spine*, *31*, 219-225.

201. Bishop, M., & Feist-Price, S. (2001). Quality of life in rehabilitation counselling: Making the philosophical practical. *Rehabilitation Education*, *15*(3), 201-212.

202. Pain, K., Dunn, M., Anderson, G., Darrah, J., & Kratochvil, M. (1998). Quality of life: What does it mean in rehabilitation? *Journal of Rehabilitation*, *64*, 5-11.

203. Roessler, R. T. (1990). A quality of life perspective on rehabilitation counselling. *Rehabilitation Counselling Bulletin*, *34*, 82-90.

204. Bishop, M. (2005). Quality of life and psychosocial adaptation to chronic illness and acquired disability: A conceptual and theoretical synthesis. *Journal of Rehabilitation*, *71*, 5-13.

205. Moons, P., Budts, W., & De Geest, S. (2006). Critique on the conceptualization of quality of life: A review and evaluation of different conceptual approaches. *International Journal of Nursing studies*, *43*, 891-901.

206. Ueda, S., & Okawa, Y. (2003). The subjective dimension of functionaing and disability: What is it and what is it for? *Disability and Rehabilitation*, *25*, 596-601.

207. Banks, S. M., & Kerns, R. D. (1996). Explaining high rates of depression in chronic pain: A diathesis-stress framework. *Psychological Bulletin*, *119*, 95-110.

208. Currie, S. R., & Wang, J. (2004). Chronic back pain and major depression in the general Canadian population. *Pain*, *107*, 54-60.

209. Dersh, J., Gatchel, R. J., Mayer, T., Polatin, P., & Temple, O. R. (2006). Prevalence of psychiatric disorders in patients with chronic disabling occupational spinal disorders. *Spine*, *31*, 1156-1162.

210. Gatchel, R. J., Polatin, P. B., Mayer, T. G., & Garcy, P. D. (1994). Psychopathology and the rehabilitation of patients with chronic low back pain disability. *Archives of Physical Medicine and Rehabilitation*, *75*, 666-670.

211. Corbière, M., Sullivan, M. J. L., Stanish, W. D. & Adams, H. (2007). Pain and depression in injured workers and their return to work: A longitudinal study. *Canadian Journal of Behavioral Science*, *39*, 23-31.

212. Blair, M. J., Robinson, R. L., Katon, W., & Kroenke, K. (2003). Depression and pain comorbidity. A literature review. *Archives of Internal Medicine*, *163*(10), 2433-2445.

213. Coutu, M. F., Durand, M. J., Loisel, P., Goulet, C. & Gauthier, N. (2007). Level of distress among workers undergoing work rehabilitation for musculoskeletal disorders. *Journal of Occupational Rehabilitation*, *17*, 289-303.

214. Schultz, I. Z., Crook, J., & Winter, A. (2005). Evidence-informed best practices for injured workers at risk for disability at the subacute stage. In I. Z. Schultz & R. J. Gatchel (Eds), *Handbook of complex occupational disability claims: Early risk identification, intervention and prevention* (pp. 443-460). New York, NY: Springer Publishing company, Inc.

215. Brooker, A. S., Cole, D. C., Hogg-Jonhson, S., Smith, J., & Frank, J. W. (2001). Modified work: Prevalence and characteristics in a sample of workers with soft-tissue injuries. *Journal of Occupational and Environmental Medicine*, *43*, 276-284.

216. Siebens, H. C. (2007). Musculoskeletal problems as comorbidities. *American Journal of Physical Medicine and Rehabilitation*, *86*(suppl.), s69-s78.

217. Feltz, D. L., & Payment, C. A. (2005). Self-efficacy belief related to movement and mobility. *Quest*, *57*, 24-36.

218 Keefe, F. J., Rumble, M. E., Scipio, C. D., Giordano, L. A., & Perri, L. M. (2004). Psychological aspects of persistent pain: Current state of the science. *The Journal of Pain*, *5*(4), 195-211.

219 Janzen, J. A., Silvius, J., Jacobs, S., Slaughter, S., Dalziel, W., & Drummond, N. (2006). What is a health expectation? Developing a pragmatic conceptual model from a psychological theory. *Health Expectations*, *9*, 37-48.

220. Gallagher, R., Donoghue, J., Chenoweth, L., & Stein-Parbury, J. (2008). Self-management in older patients with chronic illness. *International Journal of Nursing Practice*, *14*, 373-382.

221. Altmaier, E. M., Russell, D. W., Kao, C. F., Lehmann, T. R., & Weinstein, J. N. (1993). Role of self-efficacy in rehabilitation outcome among chronic low back pain patients. *Journal of Counselling Psychology*, *40*(3), 335-339.

222. Marks, R., Allegrante, J. P., & Lorig, K. (2005a). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part I). *Health Promotion Practice*, *6*(2), 37-43.

223. Marks, R., Allegrante, J. P. & Lorig, K. (2005b). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part II). *Health Promotion Practice*, *6*(2), 148-156.

224. Smarr, K. L., Parker, J. C., Wright, G. E., Stucky-Ropp, R. C., Buckelew, S. P., Hoffman, R. W., O'Sullivan, F. X., & Hewett, J. E. (1997). The importance of enhancing self-efficacy in rheumatoid arthritis. *Arthritis Care and Research*, *10*(1), 18-26.

225. Sowden, M., Hatch, A., Gray, S. E., & Coombs, J. (2006). Can four psychological risk factors for chronic pain and disability (yellow flags) be modified by a pain management programme? A pilot study. *Physiotherapy*, *92*, 43-49.

226. Lazarus, R. S. (1999). *Stress and emotions: A new synthesis*. New York, NY: Springer Publishing company, Inc.

227. Main, C. J., & Watson, P. J. (1999). Psychological aspects of pain. *Manual Therapy*, *4*(4), 203-215.

228. Carver, C. S. & Scheier, M. F. (2002). Optimism. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp.231-243). Oxford, England: Oxford University press.

229. Chaturvedi, S. K., Desai, G., & Shaligram, D. (2006). Somatoform disorders, somatization and abnormal illness behaviour. *International Review of Psychiatry*, *18*, 75-80.

230. Butler, C. C., Evans, M., Greaves, D., & Simpson, S. (2004). Medically unexplained symptoms: The biopsychosocial model left wanting. *Journal of the Royal Society of Medicine*, *97*, 219-222.

Transition

À partir de plusieurs indicateurs, le premier article a permis de dresser un portrait global des études prospectives portant sur l'identification des facteurs pronostiques de l'ajustement des personnes souffrant de troubles musculo-squelettiques (TMS). D'une part, il en ressort qu'au-delà des indicateurs d'adaptation liés à la réinsertion professionnelle, à l'incapacité physique et à la douleur, peu d'études se sont attardées à d'autres types d'indicateurs qui permettraient d'offrir une perspective biopsychosociale et plus holistique de l'ajustement. D'autre part, les quelques facteurs pronostiques identifiés et soutenu par un fort niveau d'évidence, viennent corroborer la nature multidimensionnelle de l'ajustement à un TMS. Bien que certains facteurs médicaux, psychologiques et sociaux sont identifiés comme variables significatives, l'influence des facteurs psychosociaux prédominent clairement au sein de modèles d'analyses multivariées. Même si globalement peu de différences sont observées entre les phases de chronicité, l'influence des facteurs psychosociaux se fait sentir dès la phase aiguë. Une discussion plus élaborée de ces divers facteurs suivra dans la conclusion de la thèse.

À partir d'une étude menée auprès d'un échantillon de travailleurs accidentés à risque de perte d'un lien d'emploi et prestataires d'une indemnité de revenu, le deuxième article vise à valider de manière prospective la valeur pronostique de certains facteurs de risques identifiés précédemment, ainsi qu'explorer la contribution potentielle de facteurs négligés, voire, ignorés de ce champ d'étude.

Article 2: Biopsychosocial determinants of work outcomes of occupationally injured workers receiving compensation: A prospective study

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Abstract: The evolution of musculoskeletal disorders and the adjustment to its consequences is a complex, multidimensional process determined by biopsychosocial factors. Despite the plethora of research in this field, little consensus has emerged about its main risk factors. The aim of the present study is to investigate the capacity of biopsychosocial variables to predict active involvement in a return to work process. A prospective study with follow-ups at 2 and 8 months was conducted on a sample (N = 62) of mostly chronic occupationally injured workers receiving compensation benefits from the CSST (Quebec Workers' Compensation Board). After multivariate analysis, we found gender, work recovery expectations and importance of work to be predictive of work outcomes at 2 months. After 8 months, age, medical consolidation, trauma symptoms, work support and importance of work were predictive of work outcomes. The results show the importance of approaching chronic work disability from a multidimensional perspective although psychosocial variables were the most significant predictors in this study.

INTRODUCTION

The incidence of musculoskeletal disorders (MSD) has risen to epidemic proportions in the general population, both in industrialized and developing countries (1, 2). The need to consider the dynamic interaction between biological, psychological and social factors to account for the subjective, complex and multifactorial nature of the chronic disability phenomenon is now widely accepted (3). To date, a number of reviews have attempted to identify the main determinants of chronic pain, and functional and occupational disability.

Most sociodemographic variables appear to be non-significant predictors of occupational outcomes (4, 5, 6, 7). Despite some mixed findings however, (older) age and (female) gender have shown more consistent results and have been repeatedly associated to poor work outcomes (6, 8). Although gender is supported by conflicting evidence, it remains an important factor to consider as it appears to influence how demographic and psychosocial factors affect pain and functional health status (9, 10).

Pain intensity is a medical variable shown by a number of reviews to be a fairly consistent predictor of work outcomes (5, 11, 12, 13), although inconsistent findings were also reported (6). Others have highlighted the importance of duration of pain since persistent pain, compared to (sub)acute pain, appears to be a more consistent predictor of functional and occupational disability (7). Functional limitations have shown even more consistency in predicting chronic work disability, even at the early stages of disability (5, 6, 8, 14). It is generally accepted that as time passes, the odds of developing chronic pain and long term functional and occupational disability increases (15, 16). Therefore, duration of episodes has always been viewed as an important risk factor for work disability. Despite this, the evidence for its role has been inconsistent (4, 6, 14) and the factors contributing to the disablement process over time are still not well understood. Also, the role of medical history, specifically previous episodes, is not clear: some have reported consistent associations with work disability if accompanied by significant functional limitations leading to sick leave (5, 7, 8) while others found inconsistent or no evidence (4, 6, 11). In some instances, a prior episode might even be protective if not associated with absenteeism (5).

In the case of non-specific as well as specific MSD, psychosocial variables are considered to play a major part in the development of chronic disability (17). Out of the many psychological variables, several reviews identified outcome expectancy as the prognostic factor most consistently associated with work outcomes (4, 5, 11, 12, 13, 18). Also, chronic pain and disability have often been associated with psychopathology, mostly anxiety and depression (3, 19). Although some reviews reported consistent findings (8, 12, 20), others found inconsistent evidence or have not confirmed the predictive value of anxiety and depression (4, 6, 11, 18). Despite the high prevalence of psychopathology in chronic pain populations, the causal relationship between these two is not well understood (21). However, the high prevalence of psychopathology in these populations and their frequent association with (chronic) pain and negative work outcomes underscores the importance of considering this frequent comorbid factor in rehabilitation (3, 22, 23).

Similarly, the evidence concerning potential work-related prognostic factors such as work satisfaction and work support has been inconsistent between reviews. Some authors could only find inconsistent or little evidence of work satisfaction's role in work outcomes (4, 6, 11, 18) while others considered this variable promising (7) or found strong evidence with work outcomes (24). Moreover, Shaw et al. (5) suggested that job satisfaction might be a better predictor of long term work absence than shorter absenteeism. Similarly, the evidence of workplace support from employer and colleagues is also inconsistent as some support was found for its predictive value (6, 8, 24) while others found no evidence (4). Furthermore, litigation has been considered an important risk factor of chronic occupational disability even though the studies investigating this potential factor have been scarce (7). As a result, only limited evidence of its predictive value has been reported so far (6, 11, 12). Interestingly, Bernacki and Xuguang (25) showed that attorney involvement led to increased claim duration and cost, especially for more benign injuries.

Beyond those potential risk factors for occupational disability, other pertinent variables have rarely been studied with injured workers suffering from MSD. Although psychopathological symptoms such as depression and anxiety have been extensively studied, posttraumatic symptomatology has been largely ignored in the work-injured population. However, injuries sustained at work (e.g., strains, falls, hits) can be perceived as threatening the physical integrity of the worker. Even if trauma symptoms do not meet the diagnostic criteria for posttraumatic stress disorders (PTSD), they can still negatively affect quality of life, vocational behaviour and rehabilitation outcomes (26). Many studies have reported that a significant proportion of individuals with chronic pain suffer from comorbid PTSD or symptoms (27, 28, 29). Moreover, the presence of PTSD symptoms in subjects with chronic pain and accidental injuries appears to be associated with more intense pain, functional disability and psychopathology (27, 30, 31, 32) as well as poorer work outcomes (33, 34). These observations led some to suggest the importance of assessing and attending to posttraumatic symptoms in musculoskeletal pain and in occupationally injured populations to increase the chances of rehabilitation success (35, 36). To our knowledge, no prognostic study on injured workers compensated for MSD has prospectively investigated the contribution of PTSD symptoms.

Because they may face many challenges in several life domains, individuals suffering from MSD and attending rehabilitation services will likely need to make various changes or adjustment in terms of physical and psychological health, vocational activities and interpersonal relationships. Some injured workers, however, experience ambivalence toward change and have significant difficulty adjusting to these challenges (37). Therefore, developing the motivation to tackle the challenges is likely an important factor in determining successful biopsychosocial adjustments and, ultimately, work outcomes. The Stages of Change (SOC) as part of the Transtheoritical model (TTM) (38) offers a model that describes 5 basic stages that an injured worker might go through, which conceptualizes an individual's readiness to engage in changing behaviours. Although originally validated with subjects in psychotherapy and with addictive behaviours (39, 40), the SOC model was recently applied to other populations, including chronic pain patients (41, 42, 43, 44). Until recently, motivation had not been studied prospectively and its relevance for return to work (RTW) outcomes had only been emphasized in surveys of employers (45). We are aware of only two recent studies from China that investigated and validated the prognostic value of SOC with work outcomes for injured workers (46, 47).

The motivation, or readiness to change, and efforts deployed during occupational rehabilitation will likely be influenced by the significance that work has in fulfilling important needs in the individual's life (48). The impact of disability can lead to negative outcomes in terms of quality of life, self-esteem, distress, functional disability and pain when important aspects of a person's life, such as work, are significantly affected (49). In a qualitative study, Shaw et al. (50) reported that the meaning of work and its importance were significant aspects in the decision to return to work after health problems. Moreover, in rheumatoid arthritis (51) and spinal cord injury (52) samples, the importance of work was also found to be significantly associated with work disability. However, to our knowledge, the subjective importance of work has never been assessed in prognostic studies of injured workers receiving compensation.

Work often plays an important part in people's lives and identity (53). Therefore, consequences resulting from the double jeopardy involving an injury leading to job loss (54) can be many and significant, and put the individual at higher risk of chronic (work) disability. Despite research efforts, uncertainty still remains about the role of many risk factors in predicting work outcomes. This is probably a result of the methodological heterogeneity of studies and literature reviews in this field, but also a consequence of the complexity of the chronic disability phenomenon. Therefore, further validation of most prognostic factors is warranted. Other variables rarely considered in studies with compensated injured workers could also provide additional understanding of the impact of these variables on chronic work disability.

Return to work is a dynamic process involving numerous tasks and actions, therefore, outcomes have been defined in many ways (55, 56). In this paper, we compared individuals actively involved in a return to work process to those who were not showing progress. We also studied injured workers at higher risk of persistent work disability. Consequently, our aim was to determine the predictive value of biopsychosocial predictors in an active return to work process for compensated injured workers with a MSD and at higher risk of continued disability because of a compromised relationship with their pre-injury employer. We hypothesized that the following variables would predict which injured workers would not be engaged in any return to work process: female gender, older, higher pain and disability, longer duration of the episode, history of prior episodes, more distress symptoms (depression and anxiety), lower work outcome expectations, lower job satisfaction and work support, involved in litigation as well as higher PTSD symptoms, lower readiness to change and attributing less importance to work.

METHOD

Design and procedures

This is a prospective cohort study with follow-ups at 2 and 8 months. We analyzed secondary data from a randomized control trial that compared a counselling intervention program to the usual practices of rehabilitation counsellors, while also controlling for the frequency of intervention (usual practices vs. a more intensive weekly frequency) (57). Nineteen rehabilitation counsellors from 10 regional CSST (Quebec health and safety commission) offices participated in this study. During the recruitment period between January 2001 and October 2002, a selection committee in each participating CSST office evaluated each consecutive new claimant. Once eligible subjects fitting the inclusion and exclusion criteria were identified, the workers were contacted by the team supervisor and asked if they would agree to provide their name to a research coordinator at the University of Montreal. Those who agreed were contacted by a trained research assistant who explained the study procedures and confidentiality. After two and eight months, baseline questionnaires were administered again and information concerning the rehabilitation process, compensation claims history and status were retrieved from the administrative database. The study protocol was approved by the Human research Ethics Committee of the University of Montreal as well as the lawyers from CSST.

Participants

The participants were working-age individuals suffering from musculoskeletal injuries and receiving compensation benefits from CSST. Inclusion criteria were: 1) workplace musculoskeletal injury, 2) compromised (i.e., lower possibility of returning to the pre-injury workplace for various reasons such as conflict or litigation with the preinjury employer, the expected residual functional limitations in combinaison with the type of pre-injury employment and lack of possibilities for work accommodation or reassignment in the preinjury workplace, etc.) or severed relationship to the employer, 3) age between 18 and 55 years old, 4) the current injury is not a recurrence of a prior claim for the same injury and 5) fluency in French. Exclusion criteria were: Subjects suffering from an occupationally related illness (e.g., pulmonary illness), degenerative condition (e.g., lupus erythematosus) or a severe traumatic injury (e.g., spinal cord injury).

Measurement

Sociodemographic variables

In the baseline questionnaire and the compensation database, sociodemographic data and objective work characteristics were collected. For the objectives of this paper however, *age*, *gender* and *litigation* are retained in the analysis and other variables are provided for descriptive purposes.

Pain and disability

Pain and *disability* were measured with the *Multidimensional Pain Inventory* (MPI) (58). The MPI measures the impact of pain in the life of the individual and the response of the environment to his/her pain. It consists of 62 items rated on a 7 point scale ranging from 0 to 6, in three sections that assess: 1) Pain intensity and the impact of pain in the subject's life (i.e., pain intensity, pain interference, life control, affective distress, social support); 2) The subject's perception of the responses of significant others to displays of pain (i.e., punishing, solicitous and distracting response); 3) The general level of activity. The internal consistency and reliability of the subscales have been reported to be adequate (58). For the purposes of this paper, the *pain intensity* (3 items, Cronbach's alpha = 0.82) and *pain interference* (disability) (10 items, Cronbach's alpha = 0.79) subscales were used.

Episode characteristics and medical history

Other information extracted from the administrative database included *previous compensated episodes* (yes/no), *duration of the current episode* (number of days) and *medical consolidation* (yes/no). Medical consolidation refers to the moment when physicians determine the residual physical limitations of the individual and that no other physical improvements are likely to be achieved from physical treatment. Since the interventions by the rehabilitation counsellors were often determined by the consolidation process, we considered it important to include this variable in our analysis.

Work factors

Work satisfaction : Participants rated their satisfaction with their pre-injury job using a single item, “What was your level of satisfaction with your job before your injury?”, rated on a 7-point Likert scale (1 = “Very dissatisfied” to 7 = “Very satisfied”).

Work support (Relationship with colleagues before injury): Participants rated their perception of the quality of their relationship with their co-workers using a single item, “How do you perceive the relationship you had with your colleagues before your injury?”, rated on a 7-point Likert scale (1 = “very bad” to 7 = “very good”).

Job and work involvement questionnaire (QITE : Questionnaire d’implication dans le travail et dans l’emploi) (59). This scale measures the importance of work in a person’s life and identity using 12 items rated on a 4-point Likert scale (1 = No, 2 = somewhat not, 3 = somewhat yes, 4 = yes). The alpha for this sample was 0.80.

Psychological factors

Expectation of work recovery: Participants expressed their level of confidence in their capacity to return to work by rating how much they agreed with a single item, “Do you think that you will be able to return to your job despite the consequences of your accident?”, on a 7-point Likert scale (1 = “Not at all in agreement”, 4 = moderately in agreement to 7 = “Completely in agreement”).

Beck Depression Inventory-II (BDI-II) (60). This self-report measure assesses various symptoms and attitudes characteristic of depression in the previous two weeks with a 4-point scale of increasing severity from 0 (symptom not present) to 3 (severe symptom). This measure has demonstrated very good psychometric qualities (60). Some authors have confirmed the validity of the BDI-II with people having chronic pain, suggesting 3 subscales (i.e., somatic, affective, cognitive) and a total score (61, 62). The internal consistency ranged from 0.57 (somatic) to 0.76 (cognitive), and was 0.85 for the total score for the sample used in this study.

The *State-Trait Anxiety Inventory X form* (STAI) (63) was used to assess current or transient (state) and long-standing (trait) anxiety. The two scales are comprised of 20 items rated on a 4-point scale (1 = not at all and 4 = very much so) and have shown good psychometric qualities (64). For this sample, Cronbach alphas were 0.94 (state) and 0.89 (trait).

Psychological distress was also assessed with the *Brief Symptoms Inventory* (BSI) (65). This questionnaire consists of 53 items assessing how much psychological symptoms have bothered the subject in the previous 7 days. Each item is scored on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely). The BSI measures 9 subscales (e.g., somatization, depression, anxiety) and 3 global indices of distress, including the Global Severity Index (GSI), which is calculated by adding the scores of all items and dividing it by the total number of responses. The authors report that the subscales have adequate internal consistency. In this paper, we retained the *Global Severity Index* (GSI) (alpha = 0.94) as a global measure of distress.

Modified PTSD symptoms scale-self report (MPSS-SR) (66): This 17-item scale measures the frequency and severity of current PTSD symptoms (from the previous two weeks) such as intrusion, avoidance/dissociation and arousal. The frequency of symptoms per week is rated on a 4-point Likert scale from 0 (not at all/never) to 3 (5 times or more per week/very much/almost always). The severity of symptoms is rated on a 5-point Likert scale from A (not at all distressing) to E (extremely distressing). The instrument has shown very good psychometric qualities (66) and for our sample the Cronbach alphas were 0.86 and 0.89 respectively. Because of the redundancy between the frequency and severity scales (67), we will use only the total score in our analyses, which is obtained by summing the frequency and severity scores.

The degree to which injured workers were motivated to work on their problems that led them to see a rehabilitation counsellor with the goal of returning to work was assessed using the *University of Rhode Island Change Assessment Questionnaire* (URICA) (39), a

32-item instrument rated on a 5-point scale (1 = strongly disagree to 5 = strongly agree). The URICA assesses attitudes and behaviours corresponding to the four primary stages of change, precontemplation, contemplation, action and maintenance. The language of 8 items was adapted for this population attending rehabilitation in a compensation setting. For example, the item “I’m not the problem one. It doesn’t make much sense for me to be here.” was changed to “I’m not the problem one. It doesn’t make much sense for me to meet with a rehabilitation counsellor.” The psychometric qualities of the URICA were reported to be good (39). Since injured workers in our sample were about to engage in a rehabilitation process, it was unlikely that they would be at a maintenance stage, which represents efforts to consolidate gains and prevent a possible relapse or resurgence of their problems. Therefore, for this study we will assess the readiness to change by calculating a total readiness score and adding the precontemplation, contemplation and action raw scores (reversed scoring for precontemplation) (68, 69, 70). The Cronbach’s alpha for the global readiness scale was 0.78.

Work Outcome

Based on suggestions that the complexity of the return to work process should be taken into account (55, 56), we used a broad definition of work participation as an outcome variable. Since we were comparing injured workers engaged in a return to work process to those who had not shown any progress, the workers who returned to work (part-time, full-time or with modified work or light duties) or who were involved in a job search or retraining were categorized as being involved in a return to work process. This information was obtained from the administrative database from CSST at 2 and 8 months.

Statistical analysis

Descriptive analyses were carried out to identify the distribution of variables, missing values and pertinent assumptions. More specifically, the data was examined for the presence of univariate and multivariate outliers (z score > 3.29) and multicollinearity with Pearson’s correlations (≥ 0.70) (Table 2) (71). To reduce the number of predictors, univariate logistic regressions were conducted for all independent variables with the outcome at 2 and 8 months. To avoid excluding possibly relevant predictors, a less stringent criterion of $p \leq 0.20$ was used, as suggested by Hosmer and Lemeshow (72). Finally, two final predictive models for *RTW* were tested with multiple logistic regressions where treatment modalities, frequency of intervention and potential confounders (i.e., age, gender) were controlled for, while all other potential predictors were entered using a forward stepwise procedure ($p_{in} < 0.05$, $p_{out} > 0.10$) based on the Likelyhood-Ratio (LR) criterion. In all analyses, odds ratios (OR) and 95% confidence intervals (95% CI) were calculated to describe the strength of the associations. The Nagelkerke *R* square was also reported to approximate the proportion of variance explained by each model. Given the small sample size, we deemed that an increased risk of type II error was far more probable than an increased risk of type I error. Consequently, in accordance with recommendations from some authors (73, 74), we chose not to adjust our analyses for multiple comparisons and significance was accepted at the 0.05 level. All analyses were performed with SPSS (version 11.5).

RESULTS

Sample characteristics

Data on the number of consecutive potential participants identified as fitting the inclusion and exclusion criteria, and that were contacted by the CSST during the 21-month recruiting period were not collected. Among those eligible, 180 elected to receive information from the research team. Of those, 62 (34.4%) enrolled in the study and completed the baseline assessment. We were unable to determine if there were differences in baseline variables between those who enrolled and those who did not.

The baseline characteristics of the 62 participants are presented in Table 1. The sample was overrepresented by men (n = 47), who made up 75.8% of the sample. The mean age of the population was 37.73 years (SD = 9.16), they had an average of 11.01 (SD = 3.1) years of education and $27, 431 (SD = $12, 824) of pre-injury income per year. Exactly half of the

Table 1: Participants characteristics at baseline for the total sample and according to return to work status at 2 and 8 months (N=62)

	N (%) or Mean [SD]				
		2 months		8 months	
	Total sample	**RTW**	**Not RTW**	**RTW**	**Not RTW**
Gender					
Male	47 (75.8 %)	11 (17.7%)	36 (58.1%)	24 (38.7%)	23 (37.1%)
Female	15 (24.2%)	8 (12.9%)	7 (11.3%)	8 (12.9%)	7 (11.3%)
Age	37.73 [9.16]	35.63 [9.73]	38.65 [8.86]	35.28 [9.25]	40.33 [8.46]
Pain site†					
Back	26 (41.9 %)	6 (9.7%)	20 (32.3%)	13 (21.0%)	13 (21.0%)
Upper extremities	17 (27.4 %)	7 (11.3%)	10 (16.1%)	9 (14.5%)	8 (12.9%)
Lower extremities	8 (12.9 %)	5 (8.1%)	3 (4.8%)	8 (12.9%)	0
Multiple sites	10 (16.1 %)	1 (1.6%)	9 (14.5%)	2 (3.2%)	8 (12.9%)
Other (thorax)	1 (1.6 %)	0	1 (1.6%)	0	1 (1.6%)
Previous episode (same compensation site)					
Yes	23 (37.1 %)	3 (4.8%)	20 (32.3%)	10 (16.1%)	13 (21.1%)
No	39 (62.9%)	16 (25.8%)	23 (37.1%)	22 (35.5%)	17 (27.4%)
Litigation					
Yes	16 (25.8 %)	4 (6.5%)	12 (19.4%)	8 (12.9%)	8 (12.9%)
No	46 (74.2%)	15 (24.2%)	31 (50.0%)	24 (38.7%)	22 (35.5%)
Medical consolidation (2 months)					
Yes	14 (22.6 %)	7 (11.3%)	7 (11.3%)	7 (11.3%)	7 (11.3%)
No	48 (87.4%)	12 (19.4%)	36 (58.1%)	25 (40.3%)	23 (37.1%)
Medical consolidation (8 months)					
Yes	42 (67.7 %)	-	-	29 (46.8%)	13 (21.0%)
No	20 (32.3%)	-	-	3 (4.8%)	17 (27.4%)
Duration of symptoms (days)	153.11[60.99]	163.94[66.49]	148.33[58.59]	168.32[65.20]	136.90[52.48]
0 - 90 days†	8 (12.9 %)	2 (3.2%)	6 (9.7%)	3 (4.8%)	5 (8.1%)
91- 180 days†	34 (54.8 %)	10 (16.1%)	24 (38.7%)	15 (24.2%)	19 (30.6%)
181 days or more†	20 (32.3 %)	7 (11.3%)	13 (21.0%)	14 (22.6%)	6 (9.7%)
Pain severity [0-6]	4.11 [0.97]	3.75 [1.05]	4.28 [0.90]	3.89 [0.99]	4.37 [0.91]
Disability (pain interference)[0-6]	4.44 [0.91]	4.30 [0.90]	4.49 [0.92]	4.31 [0.89]	4.58 [0.93]
Work importance [12-48]	29.33 [5.82]	31.59 [5.74]	28.33 [5.64]	30.64 [5.83]	27.94 [5.57]
Work satisfaction [1-7]	5.79 [1.33]	5.68 [1.42]	5.84 [1.31]	5.97 [1.12]	5.60 [1.52]
Work support (colleagues) [1-7]	6.15 [1.24]	6.53 [0.69]	5.98 [1.39]	6.41 [.76]	5.87 [1.57]
Recovery expectation [1-7]	2.15 [1.53]	2.79 [1.99]	1.86 [1.21]	2.34 [1.75]	1.93 [1.26]
Depression – cognitive [0-24]	0.45 [0.45]	0.63 [0.58]	0.38 [0.37]	0.47 [0.49]	0.44 [0.42]
Depression – affective [0-15]	0.65 [0.41]	0.77 [0.48]	0.59 [0.37]	0.69 [0.39]	0.60 [0.44]
Depression – somatic [0-24]	1.04 [0.47]	1.02 [0.46]	1.05 [0.48]	1.01 [0.46]	1.08 [0.49]
Anxiety – state [20-80]	42.47 [13.07]	38.95 [11.30]	44.02 [13.61]	41.09 [12.41]	43.93 [13.79]
Anxiety – trait [20-80]	42.45 [11.00]	43.37 [11.23]	42.05 [11.01]	42.69 [10.40]	42.20 [11.78]
Global severity index [0-4]	0.86 [0.51]	1.01 [0.48]	.80 [0.52]	.85 [0.49]	.87 [0.54]
PTSD total [0-119]	30.09 [20.21]	28.95 [19.58]	30.60 [20.69]	25.73 [17.99]	34.76 [21.66]
Readiness [24 - 120]	88.29 [14.37]	89.23 [15.13]	87.87 [14.19]	89.14 [15.17]	87.38 [13.67]

SD = standard deviation. † For descriptive purposes and not included in analyses.

subjects were either married or common law. The sample distribution for location of pain site included 41.9% back injury and 27.4% upper extremities. The primary diagnosis revealed that most of participants suffered from sprains (53.2%). More then

Table 2: Bivariate correlations between the independent variables (predictors)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Age	–																				
2. Gender	-0.07	–																			
3. Previous episode	0.11	0.36**	–																		
4. Litigation	0.05	-0.09	-0.07	–																	
5. Medical consoled. 2m	-0.24	0.04	0.06	0.03	–																
6. Medical consolid. 8m	-0.04	0.01	0.03	0.17	0.37**	–															
7. Symptoms duration	-0.19	0.16	-0.14	0.04	0.07	0.24	–														
8. Pain severity	0.07	-0.01	0.25*	-0.09	0.05	-0.11	0.03	–													
9. Disability	0.07	0.01	0.06	0.05	0.06	-0.08	-0.04	0.61**	–												
10. Recovery expectation	-0.13	-0.14	-0.16	0.11	0.03	-0.03	-0.05	-0.50**	-0.39**	–											
11. Depression – cognitive	-0.09	-0.09	0.033	0.26**	0.09	0.20	-0.08	0.08	0.21	0.004	–										
12. Depression – affective	0.20	-0.13	-0.09	0.20	0.03	0.03	-0.10	0.03	0.27*	0.02	0.62**	–									
13. Depression – somatic	0.13	0.17	0.18	-0.06	0.10	-0.04	0.01	0.25*	0.44**	-0.13	0.21	0.57**	–								
14. Anxiety – situational	-0.07	0.07	-0.03	0.24	0.00	-0.12	0.01	0.25	0.30*	-0.07	0.36**	0.36**	0.29*	–							
15. Anxiety – general	-0.10	-0.00	0.13	0.21	0.05	0.05	0.13	0.14	0.28*	-0.12	0.58**	0.51**	0.45**	0.61**	–						
16. Distress(GSI)	-0.11	-0.06	-0.07	0.21	-0.00	0.04	-0.02	0.08	0.29*	0.02	0.64**	0.59**	0.49**	0.39**	0.70**	–					
17. PTSD total	-0.04	0.08	0.04	0.03	0.19	-0.16	0.02	0.47**	0.46**	-0.25*	0.35**	0.33**	0.46**	0.49**	0.52**	0.51**	–				
18. Work importance	0.21	0.10	0.23	0.01	0.04	0.09	0.07	0.01	0.09	-0.10	0.301**	0.11	0.10	0.20	0.30*	0.14	0.20	–			
19. Work satisfaction	-0.02	0.31*	0.10	-0.13	-0.18	-0.01	0.11	-0.04	-0.07	-0.12	-0.16	-0.12	0.02	-0.13	-0.15	-0.23	-0.09	0.06	–		
20. Work support	0.21	0.10	0.02	-0.28*	-0.16	-0.03	0.14	-0.09	-0.05	-0.03	-0.13	0.05	-0.02	-0.12	-0.14	-0.19	-0.16	-0.01	0.55**	–	
21. Readiness	-0.05	0.00	0.02	0.19	0.10	0.06	0.30*	0.06	0.27*	-0.12	0.16	0.05	-0.02	0.14	0.30*	0.12	0.27*	0.14	-0.05	-0.06	–

* P < ,05 ** P < ,01

one-quarter (25.8%, n = 16) of participants were involved in litigation either with CSST or their employer. The average duration of symptoms was 154.27 days (SD = 63.82) where only 12.9% of participants had symptoms lasting less than 90 days (i.e., acute/subacute pain) at baseline. Therefore, the vast majority in this sample were already in a chronic phase.

Course

The course of return to work at both follow-ups was as follows: After two months, 30.6% of subjects were classified as return to work. More specifically 14.5% of the participants had fully returned to work (n = 9), 6.5% were either in modified work or light duty (n = 4) and 9.7% had begun job retraining or were actively searching for a job (n = 6). The majority of the subjects (69.3%) were still unemployed and not involved in any RTW process. At the 8 month follow-up, 51.6% of injured workers were coded as return to work, about one fourth (25.8%) had resumed work (n = 16), 3.2% were in modified work or light duty (n = 2) and 22.6% were involved in job search or training (n = 14). The other 48.4% of subjects were still not involved in a RTW process (n = 30).

Prognostic factors at 2 months

Among the independent variables examined, univariate analyses identified 11 variables as potential predictors since they were related ($p \leq 0.20$) to involvement in a RTW process at 2 months (Table 3). These variables were then entered into a multivariate logistic regression model to identify which potential predictors remained significant determinants of return to work after 2 months of follow-up. No multivariate outliers were identified. In the final multivariate model, only 3 baseline variables remained statistically significant. Injured workers more likely to be engaged in a RTW process at 2 months were men (OR = 7.83, 95% CI = 1.40 – 43.91), those who had higher expectations about their capacity to resume work (OR = 1.80, 95% CI = 1.07 – 2.95) and those for whom work was more important (OR = 1.30, 95% CI = 1.07 – 1.50). The final multiple logistic regression model explained 42.9% of the variance at 2 months and correctly classified 95.3% of subjects who were not involved in a RTW process (specificity), but only 42.1% of those who were (sensitivity).

Table 3: Univariate and multivariate logistic regressions with baseline prognostic factors and work outcome at 2 months (n = 62)

	Univariate analysis (2 months)			**Multivariate analysis§ (2 months)**		
	OR	**95% CI**	**P value**	**OR**	**95% CI**	**P value**
Gender : male	3.74	1.11 – 12.65	0.04†	7.83	1.40 – 43.91	0.02
Age	0.96	0.91 - 1.02	0.22	0.91	0.83 - 1.01	0.08
Previous episode (same compensated site) : Yes	4.64	1.18 - 18.27	0.03†			
Litigation : Yes	1.45	0.40 - 5.27	0.571			
Medical consolidation (2 months): Yes	0.33	0.10 - 1.15	0.08†			
Medical consolidation (8 months): Yes	-	-	-			
Duration of symptoms (days)	1.00	0.99 - 1.01	0.32			
Pain severity	0.56	0.31 - 1.02	0.06†			
Disability (pain interference)	0.79	0.44 - 1.43	0.44			
Work recovery expectation	1.47	1.02 - 2.12	0.04†	1.80	1.07 - 2.95	0.03
Depression - cognitive	1.17	1.00 - 1.36	0.05†			
Depression - affective	1.15	0.97 – 1.36	0.11†			
Depression - somatic	0.97	0.77 – 1.22	0.80			
Anxiety - situational	0.97	0.93 – 1.01	0.16†			
Anxiety - general	1.01	0.96 – 1.06	0.66			
Global severity index	2.33	0.78 - 6.95	0.13†			
PTSD total	0.99	0.97 - 1.02	0.76			
Readiness to change	1.01	0.98 - 1.04	0.53			
Work importance	1.10	0.99 - 1.21	0.07†	1.30	1.07 - 1.50	0.01
Work satisfaction	0.92	0.62 - 1.37	0.68			
Work support (rel. with colleagues)	1.71	0.86 - 3.41	0.13†			

OR = odds ratio; CI = Confidence Intervals;
† Variables included in the multivariate analysis. § Adjusted for treatment modalities, frequency of interventions, age & gender.

Prognostic factors at 8 months

The univariate analyses including all baseline variables identified 7 factors as potential predictors ($p \leq 0.20$) of return to work at the 8 month follow-up (Table 4). Following the examination of multivariate outliers, one subject was excluded from this analysis. Among the variables considered in the multivariate analysis to be potential determinants of involvement in a return to work process at the 8 month follow-up, 5 were found to be significant predictors beyond other confounders. For this sample, subjects less likely to be engaged in a RTW process at 8 months were older (OR = 0.83, 95% CI = 0.72 – 0.96), not medically consolidated (OR = 0.04, 95% CI = 0.01 – 0.41) and had more PTSD symptoms (OR = 0.94, 95% CI = 0.88 – 0.99). In contrast, individuals more likely to be involved in a RTW process attributed more importance to work (OR = 1.40, 95% CI = 1.08

– 1.80) and perceived higher work support from colleagues (OR = 2.63, 95% CI = 1.05 – 6.58). This model's explained variance was 67.8% and it was able to correctly classify 90.6% of injured workers who were involved in a RTW process (sensitivity) and 86.2% of those who were not (specificity).

Table 4: Univariate and multivariate logistic regressions with baseline prognostic factors and work outcome at 8 months (n = 61)

	Univariate analysis (8 months)			**Multivariate analysis§ (8 months)**		
	OR	**95% CI**	**P value**	**OR**	**95% CI**	**P value**
Gender : male	1.10	0.34 – 3.51	0.88			
Age	0.94	0.88 - 0.99	0.03†	0.83	0.72 - 0.96	0.02
Previous episode (same compensated site) : Yes	1.68	0.60 - 4.76	0.33			
Litigation : Yes	1.09	0.35 - 3.40	0.88			
Medical consolidation (2 months): Yes	1.09	0.33 - 3.58	0.89			
Medical consolidation (8 months): Yes	0.08	0.02 - 0.32	0.00†	0.04	0.01 - 0.41	0.01
Duration of symptoms (days)	1.01	1.0 - 1.02	0.04†			
Pain severity	0.57	0.32 - 1.02	0.06†			
Disability (pain interference)	0.71	0.40 - 1.25	0.24			
Work recovery expectation	1.20	0.85 - 1.70	0.30			
Depression - cognitive	1.02	0.89 – 1.17	0.78			
Depression - affective	0.94	0.76 – 1.16	0.56			
Depression - somatic	1.07	0.92 – 1.25	0.40			
Anxiety - situational	0.98	0.95 – 1.02	0.39			
Anxiety - general	1.00	0.96 – 1.05	0.86			
Global severity index	0.89	0.33 - 2.38	0.82			
PTSD total	0.98	0.95 - 1.00	0.08†	0.94	0.88 - 0.99	0.03
Readiness to change	1.01	0.99 - 1.04	0.36			
Work importance	1.08	0.984- 1.18	0.11†	1.40	1.08 - 1.80	0.01
Work satisfaction	1.24	0.84 - 1.83	0.28			
Work support (rel. with colleagues)	1.50	0.92 - 2.45	0.11†	2.63	1.05 – 6.58	0.04

OR = odds ratio; CI = Confidence Intervals;
† Variables included in the multivariate analysis. § Adjusted for treatment modalities, frequency of interventions, age & gender.

DISCUSSION

In this prospective cohort study, we investigated the biopsychosocial predictors for people engaged in a return to work process vs. those who continued in a state of chronic work disability. Baseline predictors of poor work outcome at the 2 month follow-up were being female, having low work recovery expectations and attributing lower importance to work. At 8 months, being older, having more PTSD symptoms, attributing less importance to work, perceiving less work support from colleagues and not being medically consolidated were significant predictors of poor work outcomes. Because socio-demographic, medical, psychological and work-related variables have all been identified as significant determinants at both follow-ups, the results from this study reaffirm the importance of considering biopsychosocial prognostic factors in determining chronic occupational disability. Noteworthy is the fact that different prognostic factors predict work outcomes at 2 and 8 months. Some variables appear to be more stable, however, such as “importance of work”, and these might reflect a more stable trait. On the other hand, the influence of variables like recovery expectations, PTSD symptoms, work support and being medically consolidated appear to be more sensitive to context.

S*ociodemographic factors*

Similar to other prospective studies (75, 76), gender (female) was a significant predictor of poor work outcomes (not being involved in a RTW process) despite the small number of women in our sample. However, this effect was significant only at the 2 month follow-up and which is coherent with the inconsistent evidence concerning gender reported in the literature 77, 78). This might be explained in part by the fact that women were found in some studies to show poorer shorter term improvements in pain and functional disability (79, 80). Others found that the way demographic and psychosocial factors affect pain and functional health status varies according to gender (9, 10) which suggests the need to investigate further those differences to better understand the potential influence of gender on work disability. Moreover, in stratified analyses according to gender, Dionne et al. (81) highlighted the significant differences in prognostic factor of RTW between men and women.

Older age was found to be predictive of poor work outcomes in our sample, although, at 2 months this relationship did not reach statistical significance. This might be an effect of the small sample size. Our findings are consistent with many studies that also reported a significant association with poor work outcomes (75, 82, 83, 84, 85). It is possible that older individuals have a longer physical recovery period or that, being closer to retirement, some might be more inclined to remain on compensation benefits as a transition toward retirement pension (13). A generational difference in terms of education level or the length of time in the same job might also be related to older age. This, in turn, might contribute to a lower level of employability and a more challenging professional reintegration for individuals with functional limitations that significantly restrict the possibility of reintegrating the pre-injury job. Disability management (DM) (e.g., work accommodation) has been found to be an important predictor of work outcomes (86, 87, 88) and early, intense DM efforts might be especially useful in the case of older workers (6).

Medical variables

Most medical variables studied were not significant prognostic factors in this study. Even though injured workers not engaged in a RTW process showed higher pain and disability scores, those factors were not significant in both univariate and multivariate analyses. Only medical consolidation was a predictor of being engaged in a RTW process at 8 months. At the time of the study, interventions by rehabilitation counsellors in the context of CSST were often determined by the evolution of medical treatments and by the final functional limitation diagnosis by the treating physicians, likely explaining the importance of this variable in our multivariate model. It is, nevertheless, interesting that despite this determinant of rehabilitation interventions, other biopsychosocial factors also explained part of the variance in work outcomes in this sample. The absence of other medical variables in multivariate models also suggest they are not as significant in predicting work outcomes as psychological or work-related factors.

Only higher pain intensity showed a trend in univariate analyses at both follow-ups, which might be accounted for by the small sample size. Although the role of pain intensity has been supported by inconsistent evidence in the literature, our results are consistent with studies that did not confirm its predictive role with work outcomes (75, 77, 82, 89, 90, 91). More unexpected, however, was the lack of association between functional limitations and work outcomes. Still other studies have reported a lack of predictive value for this factor (77, 81, 82, 84, 92). Even given the inconsistency in the literature, pain intensity and functional limitations still appear to fluctuate in a similar fashion. This is probably due to the fact that pain intensity and functional disability are eminently subjective experiences and are usually highly determined by psychosocial factors. This is illustrated by the fact that individuals with similar conditions experience a wide range of symptoms and limitations (17).

Although it is generally accepted that the duration of an episode is an important risk factor for continued functional and work disability, the evidence has been inconsistent in prospective multivariate studies, as many studies could not confirm its role beyond other variables (76, 81, 85, 91, 92, 93). Our study found that longer duration of episode was a significant predictor of poor work outcome but only in the univariate analysis at 8 months. This suggests that other factors are stronger determinants of work outcomes beyond duration. It is possible that, as reported by Dunn and Croft (94), there is little difference in condition (e.g., improved disability) between individuals with back pain of less than three years duration of symptoms. However, it is likely that the idiosyncratic changes occurring over time in the biopsychosocial characteristics of the individuals as they engage in a disablement spiral (e.g., lower self-efficacy, fear-avoidance, distress, physical deconditioning, etc.), would be more significantly related to continued work disability.

The presence of previous compensated episodes for the same body region was associated with poor work outcomes but only univariately at 2 months. Our results agreed with other studies that also concluded there was an absence of prognostic value for previous episodes in multivariate models (81, 85, 90, 91). It is not clear, however, how previous compensated episodes might affect future episodes, whether they signal vulnerability in a specific body region or if personal and environmental factors are more at play in the recurrence of lesions (95). It is also likely that the subject's expectations about the current episode will be influenced by the way previous experiences of musculoskeletal injuries and work disability were resolved.

Psychological variables

Recovery expectations and trauma symptomatology were the two main psychological variables validated by our results. Recovery expectations has been one of the most consistent psychosocial predictors of work outcomes across prospective multivariate studies (78, 84, 92, 93, 96, 97, 98, 99). Moreover, Fleten et al. (100) found that compared to professional predictions based on medical data, the sick-listed individual's perceptions about their work capacity more accurately predicted the length of sick leave. Our results reaffirm the importance of expectations for work recovery in the prediction of work outcomes, although it was significant only at the 2 month follow-up. This emphasizes the paramount role of the subjective experience of the individual in determining future outcomes. It is noteworthy that average expectations for work capacity in our sample were quite low at baseline. Despite this low expectation, our results suggest that even in a sample of mostly chronically disabled workers, the significance of outcome expectations remains.

Similar to Lange et al. (33) and Opsteegh et al. (34), our multivariate model also identified trauma-related symptoms as being a significant predictor of poor work outcomes at the 8 month follow-up. This is a significant finding since PTSD symptoms, despite growing recognition of their role in chronic pain, have been largely ignored in prognostic research on work disability. The fact that seemingly minor accidents can lead to trauma symptoms (101) highlights the importance of the subjective experience of the injured worker. As explained by Strauser (26), the perception of the accident or injury leading to trauma symptoms can result from the interaction between the individual's past experiences (e.g., past trauma), available resources, duration of exposure to the event and social context. He also reported that trauma symptomatology has been associated with negative vocational behaviours (102). Therefore, our results reaffirm the importance of assessing psychopathology, such as trauma symptoms in compensated work-injured workers since it can impede rehabilitation efforts (103).

A much higher prevalence for depression exists in MSD populations (21, 104, 105) and a greater occurrence of high levels of depressive symptoms in injured workers suffering from MSD has been found, especially for those who have been work disabled or who experienced recurrence (106). Despite this, the role of depressive symptoms in work disability remains unclear. Our results did not validate the role of depression in the prediction of work outcomes at either of the 2 or 8 month follow-ups, similar to previous studies (76, 81, 96). Moreover, studies on the role of anxiety in predicting work outcomes have been scarce and results have been equivocal in multivariate models. Similar to other studies (76, 96), we did not identify anxiety as a significant predictor. This might be due to the instrument we used, the STAI, which was also found to be unrelated to return to work by Schultz et al. (96). As suggested by these authors, measuring avoidance of movements based on fear of reinjury (fear-avoidance) might have been more useful.

Finally, our study did not confirm the prognostic value of readiness to change. Given the difficulty in assigning patients to discrete stages of change (107), we used a global continuous measure of readiness which had recently shown promise (68, 70, 108). Surprisingly, however, initial motivation or readiness to change did not distinguish injured between workers with poor and better work outcomes at either follow-up interval. One possible reason might stem from the instrument used and, despite some modifications for our sample, it is possible that the formulation of the items remained too broad. Most of the items refer to the readiness to work on the “problem(s)” that the respondents face and that contributed to the need for rehabilitation services. We originally opted to maintain this formulation, recognizing that the obstacles to work reintegration are multiple and idiosyncratic. In retrospect, since RTW after an occupational injury is a complex process, using this formulation might have led to increased heterogeneity in responses. Dijkstra et al. (109) suggested that less specific behaviours might lead to various interpretations of items. Other adapted versions of the URICA and the SOC model that are more problem-specific have been developed in recent years (110) and might have been more adequate for our sample and led to better prediction.

Work-related variables

An interesting finding is the significance of the importance that work represents for the injured workers. This was the only constant predictor in our multivariate models at both follow-ups. Work undoubtedly fulfills various needs for each individual, such as economic, psychosocial and self-determination needs (53, 111). The importance of work in a person's life has been identified as a determining factor of the impact of unemployment where people with higher work involvement suffer more from their unemployment (112, 113). Work importance is considered by some to be somewhat stable and possibly difficult to change (51). However, Nordenmark and Strandh (110) showed that during a period of unemployment, the importance of work can sometimes change when individuals fulfill their needs in other ways, for example through other meaningful social roles or compensation benefits. Some compensated injured workers will engage in a disablement process and the gradual adoption of a sick role (114), which could also lead to changes in the value of work. Although our study did not allow us to examine the evolution of work importance and its determinants, it, nevertheless, highlights the significance of this factor and the need to consider it in future research, as well as in RTW interventions (48).

For many, one of the functions of work is to fulfill a need for relatedness and social support (53). Injured workers not actively engaged in a RTW process at 8 months reported having lower quality relationships with their pre-injury co-workers. This is consistent with other prospective studies that found low support at work to be a significant predictor of poor work outcomes (90, 92, 115). Perceiving good support at work might help injured workers to surmount other obstacles in their RTW process (5). Similar to other studies (82, 90, 93, 97), we did not identify job satisfaction as a significant predictor of work outcomes. These two factors were assessed using single items in this study and our results should be replicated with validated measures since other prospective studies found divergent results in multivariate models for work support (75, 77, 81, 85, 96, 97) and job satisfaction (85, 92).

Lastly, it has been previously hypothesized that litigation poses a risk for work disability either because of secondary gains through monetary compensation or because of the stressful experience of the litigation process, which can slow down recovery (116). Like other prospective studies (77, 82, 117), litigation was not identified as a significant prognostic factor for work outcomes. This implies that other variables are far more important prognostic factors. It is, nevertheless, possible that the impact of litigation on RTW might be indirect, through other variables such as deteriorated work relations. Furthermore, the impact of litigation can be manifold as shown by Landers et al. (118) where neck pain patients showed no improvement of their pain, functional disability and depression until the resolution of their litigation. This complex dynamic should be investigated further.

Strengths and limits

The strengths of this study are its prospective design, the inclusion of biopsychosocial variables as well as the inclusion and identification of promising prognostic factors not yet studied in this body of literature. This study also aimed to identify subjects at higher risk of continued work disability and the low percentage of participants that returned to work, compared to other prospective studies, suggested that our sample might be representative of such claimants. However, this might also be due to the fact that most subjects in our sample were already in a chronic phase of work disability (greater than 3 months).

However, readers should be cautious in generalizing our results and some limitations must be addressed. First, the small sample size is the main limit of this study and suggests that our result should be replicated with a larger sample. Second, participation rate (34.4%) was low and information concerning subjects who refused to participate in the study was not obtained. Therefore, it was impossible to assess if differences existed between the enrolees and if there was selective participation. Pain and disability, for example, might have influenced participation (95) but social desirability might also have contributed to participation for some, even though subjects were reassured of confidentiality and that participation would not affect their services.

Third, the broad definition of RTW process we used requires some caution when comparing our results to other studies using heterogenous operationalizations of work outcomes. The operationalization used in this study allowed us to reflect some of the complexity of work reintegration by taking into account other important aspects of that process. Using an administrative database to determine the work status of the participants might also be susceptible to bias. It has been suggested that first RTW or claim closure are misleading measures of recovery and work outcomes (119, 120) since recurrence is a frequent phenomenon in MSD and injured worker populations (121, 122). It is possible that some of the workers who returned to full-time work will have experienced recurrence, however, this information was not available.

Fourth, the sample was recruited from the rehabilitation services offered by the Quebec workers compensation board (CSST) and, therefore, caution should be exercised in generalizing our results to individuals with non-work-related musculoskeletal injuries who received benefits under a different system or rehabilitation services in other contexts.

Fifth, some variables (e.g., expectations of work recovery, work support) were assessed with a single item and their validity in assessing these concepts has not been validated.

Finally, we included only a limited number of factors and yet were able to explain a significant amount of variance at both follow-up intervals (42.9% and 67.8%). Although significant, this indicates that other important prognostic factors played a significant explicative role but were not included in our models.

Clinical implications

Most of the variables identified in this study as significant prognostic factors, such as expectations of work recovery, work importance, PTSD and work support are amenable to change and can serve to guide interventions in the context of rehabilitation practices. For example, there is convincing evidence with chronic disease and pain populations that various interventions can enhance self-efficacy, which was shown to lead to positive rehabilitation outcomes (123, 124, 125, 126). Clinicians should be attentive to which injured workers present low self-efficacy, as well as PTSD symptomatology that might impede the worker's rehabilitation efforts. The evolution of self-efficacy, as well as the importance of work for the injured worker, should also be monitored since there is some evidence that absenteeism from work can negatively affect those factors (111, 127). This seems particularly important in the context of rehabilitation practices in a compensation setting that can be greatly influenced by the medical consolidation process. Furthermore, it is important to engage the workers in an early RTW process (86) to maintain a relationship with the workplace as well as to foster supporting relationships. This can be achieved through cautious disability management for which the inclusion of all stakeholders is essential (128). When well executed, there is evidence that it can lead to a reduction in recurrence of sick leave (129).

Conclusion

The ability to identify injured workers at higher risk of chronic work disability is essential. To this end, this study makes a significant contribution to the body of knowledge by identifying significant prognostic factors for injured workers receiving compensation. Patients at higher risk of poor work outcomes were women, older, attributed less value to work, had lower work recovery expectations, presented more PTSD symptoms, perceived less support from their workplace and were in a longer medical consolidation process. Our findings confirm the multifactorial and biopsychosocial nature of work disability and the return to work process, although it should be noted that psychosocial variables were predominant in our models. Finally, another important contribution was the identification of promising but rarely studied prognostic factors (PTSD, work importance) that should be considered by clinicians, but must also be validated in future research.

References

1. Chopra, A., & Abdel-Nasser, A. (2008). Epidemiology of rheumatic musculoskeletal disorders in the developing world. *Best Practices & Research Clinical Rheumatology*, *22*(4), 583-604.

2. Punnett, L., & Wegman, D. H. (2004). Work-related musculoskeletal disorders: The epidemiologic evidence and the debate. *Journal of Electromyography and Kinesiology*, *14*, 13-23.

3. Gatchel, R. J., Pang, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychological Bulletin*, *133*(4), 581-624.

4. Kuijer, W., Groothoff, J. W., Brouwer, S., Geertzen, J. H. B., & Dijkstra, P. U. (2006). Prediction of sickness absence in patients with chronic low back pain: A systematic review. *Journal of Occupational Rehabilitation*, *16*, 439-467.

5. Shaw, W. S., Pransky, G., & Fitzgerald, T. E. (2001). Early prognosis for low back disability: Intervention strategies for health care providers. *Disability and Rehabilitation*, *23*(18), 815-828.

6. Steenstra, I. A., Koopman, F. S., Knol, D. L., Kat, E., Bongers, P. M., de Vet, H. C. W. & van Mechelen, W. (2005). Prognostic factors for duration of sick leave due to low-back in Dutch health care professionals. *Journal of Occupational Rehabilitation, 15*(4), 591-605.

7. Truchon, M., & Fillion, L. (2000). Biopsychosocial determinants of chronic disability and low-back pain: A review. *Journal of Occupational Rehabilitation*, *10*(2), 117.

8. Crook, J., Milner, R., Schultz, I. Z., & Stringer, B. (2002). Determinants of occupational disability following a low back injury: A critical review of the literature. *Journal of Occupational Rehabilitation*, *12*(4), 277-295.

9. Lillefjell, M. (2006). Gender differences in psychosocial influences and rehabilitation outcomes for work-disabled individuals with chronic musculoskeletal pain. *Journal of Occupational Rehabilitation*, *16*, 659-674.

10. McGeary, D. D., Mayer, T. G., Gatchel, R. G., Anagnostis, C., & Proctor, T. J. (2003). Gender-related differences in treatment outcomes for patients with musculoskeletal disorders. *The Spine Journal*, *3*, 197-203.

11. Kent, P. M., & Keating, J. L. (2008). Can we predict poor recovery from recent-onset non-specific low back pain? A systematic review. *Annual Therapy*, *13*, 12-28.

12. Selander, J., Marnetoft, S. U., Bergroth, A., & Ekholm, J. (2002). Return to work following vocational rehabilitation or neck, back and shoulder problems: Risk factors reviewed. *Disability and Rehabilitation*, *24*(14), 704-712.

13. Turner, J. A., Franklin, G., & Turk, D. C. (2000). Predictors of chronic disability in injured workers: A systematic literature synthesis. *American Journal of Industrial Medicine*, *38*, 707-722.

14. Kuijpers, T., Van der Windt, D. A. W. M., Van der Heijden, G. J. M. G., & Bouter, L. M. (2004). Systematic review of prognostic cohort studies on shoulder disorders. *Pain*, *109*, 420-431.

15. Krause, N., & Ragland, D.R. (1994). Occupational disability due to low back pain: A new interdisciplinary classification based on a phase model of disability. *Spine*, *19*(9), 1011-1020.

16. Waddell, G. (2004). The clinical course of low back pain. In G. Waddell (Ed.). *The back pain revolutio*n. Edinburgh: Churchill Livingston.

17. Waddell, G. (2006). Preventing incapacity in people with musculoskeletal disorders. *British medical Bulletin*, *77-78*, 55-69.

18. Iles, R. A., Davidson, M., & Taylor, N. F. (2008). Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: A systematic review. *Occupational and Environmental Medicine*, *65*, 507-517.

19. Kuch, K. (2001). Psychological factors and the development of chronic pain. *The Clinical Journal of Pain*, *17*(4), S33-S38.

20. Linton, S. J. (2000). A review of psychological risk factors in back and neck pain. *Spine*, *25*(9), 1148-1156.

21. Dersh, J., Gatchel, R. J., Mayer, T., Polatin, P., & Temple, O. R. (2006). Prevalence of psychiatric disorders in patients with chronic disabling occupational spinal disorders. *Spine*, *31*, 1156-1162.

22. Corbière, M., Sullivan, M. J., Stanish, W. D., & Adams, H. (2007). Pain and depression in injured workers and their return to work: A longitudinal study. *Canadian Journal of Behavioral Science*, *39*(1), 23-31.

23. Lloyd, C., Waghorn, G., & McHugh, C. (2008). Musculoskeletal disorders and comorbid depression: Implications for practice. *Australian Occupational Therapy Journal*, *55*, 23-29.

24. Linton, S. J. (2001). Occupational psychological factors increase the risk for back pain: A systematic review. *Journal of Occupational Rehabilitation*, *11*(1), 53-66.

25. Bernacki, E. G., & Xuguang, T. (2008). The relationship between attorney involvement, claim duration and workers' compensation costs. *Journal of Occupational and Environmental Medicine*, *50*(9), 1013-1018.

26. Strauser, D. R. (2008). Trauma symptomatology: Implications for return to work. *Work*, *31*, 245-252.

27. Asmundson, G. J. G., Bonin, M. F., Frombach, I. K., & Norton, G. R. (2000). Evidence of a disposition toward fearfulness and vulnerability to posttraumatic stress in dysfunctional pain patients. *Behaviour Research and Therapy*, *38*, 801-812.

28. Otis, J. D., Keane, T. M., & Kerns, R. D. (2003). An examination of the relationship between chronic and post-traumatic stress disorder. *Journal of Rehabilitation Research and Developmen*t, *40*(5), 397-406.

29. Vranceanu, A. M., Safren, S., Zhao, M., Cowan, J., & Ring, D. (2008). Disability and psychologic distress in patients with non-specific and specific arm pain. *Clinical Orthopaedics and Related Research*, *466*, 2820-2826.

30. Geisser, M. E., Roth, R. S., Bachman, J.E., & Ekert, T. A. (1996). The relationship between symptoms of posttraumatic stress disorder and pain, affective disturbance and disability among patients with accident and non-accident related pain. *Pain*, *66*, 207-214.

31. Sharpe, T. J., & Harvey, A. G. (2001). Chronic pain and posttrautic stress disorder: Mutual maintenance? *Clinical Psychology Review*, *6*, 857-877.

32. Roth, R. S., Geisser, M. E., & Bates, R. (2008). The relation of post-traumatic stress symptoms to depression and pain in patients with accident-related chronic pain, *The Journal of Pain*, *9*(7), 588-596.

33. Lange, C., Burgmer, M., Braunheim, M., & Heuft, G. (2007). Prospective analysis of factors associated with work reentry in patients with accident-related injuries. *Journal of Occupational Rehabilitation*, *17*, 1-10.

34. Opsteegh, L., Reinders-Messelink, H. A., Schollier, D., Groothoff, K. P., Dijkstra, P. U. & Van der Sluis, C. K. (2009). Determinants of return to work in patients with hand disorders and hand injuries. *Journal of Occupational Rehabilitation*, *19*, 245-255.

35. Asmundson, G. J. G., Norton, G. R., Allerding, M. D., Norton, P. J., & Larsen, D. K. (1998). Posttraumatic stress disorder and work-related injury. *Journal of Anxiety Disorders*, *12*(10), 57-69.

36. Grossi, G., Soares, J. J. F., Ängeslevä, J., & Perski, A. (1999). Psychosocial correlates of long-term sick-leave among patients with musculoskeletal pain. *Pain*, *80*, 607-619.

37. Markland, D., Ryan, R. M., Tobin, V. J., & Rollnick, S. (2005). Motivational interviewing and self-determination theory. *Journal of Social and Clinical Psychology*, *24*(6), 811-831.

38. Prochaska, J. O., & Diclemente, C. C. (1992a). The transtheoritical approach. In J.C. Norcross & M. R. Goldfried (Eds.), *The handbook of psychotherapy integration* (pp.300-333). New-York, NY: Basic Books.

39. McConnaughy, E. A., DiClemente, C. C., Prochaska, J. O., & Velicer, W. F. (1989). Stages of change in psychotherapy: A follow-up report. *Psychotherapy*, *26*(4), 494-503.

40. Prochaska, J. O., Diclemente, C. C., & Norcross, J. C. (1992b). In search of how people change. Applications to addictive behaviours. *American Psychologist*, *47*, 1102-1114.

41. Burns, J. W., Glenn, B., Lofland, K., Bruehl, S., & Harden, R. N. (2005). Stages of change in readiness to adopt a self-management approach to chronic pain: The moderating role of early-treatment stage progression in predicting. *Pain*, *115*, 322-331.

42. Dijkstra, A., Vlaeyen, J. W. S., Rijnen, H., & Nielson, W. (2001). Readiness to adopt the self-management approach to cope with chronic pain in fibromyalgic patients. *Pain*, *90*, 37-45.

43. Keefe, F. J., Lefebvre, J. C., Kerns, R. D., Rosenberg, R., Beaupre, P., Prochaska, J., Prochaska, J. O., & Caldwell, D. S. (2000). Understanding the adoption of arthritis self-management: Stages of change profiles among arthritis patients. *Pain*, *87*, 303-313.

44. Kerns, R. D., Wagner, J., Rosenberg, R., Haythornthwaite, J., & Caudill-Slosberg, M. (2005). Identification of subgroups of persons with chronic pain based on profiles on the pain stages of change questionnaire. *Pain*, *116*, 302-310.

45. Sullivan, M. J. L., Feuerstein, M., Gatchel, R., Linton, S. J. & Pransky, G. (2005). Integrating psychosocial and behavioural interventions to achieve optimal rehabilitation outcomes. *Journal of Occupational Rehabilitation*, *15*(4), 475-489.

46. Li-Tsang, C. W. P., Chan, H. H. K., Lam, C. S., Lo-Hui, K. Y. L., & Chan, C. C. H. (2007). Psychosocial aspects of injured worker's returning to work in Hong-Kong. *Journal of Occupational Rehabilitation*, *17*, 279-288.

47. Xu, Y-W., Chan, C. C. H., Lam, C. S., Li-Tsang, C. W. P., Lo-Hui, K. Y. L., & Gatchel, R. J. (2007). Rehabilitation of injured workers with chronic pain: A stage of change phenomenon. *Journal of Occupational Rehabilitation*, *17*, 727-742.

48 Roessler, R. T. (1989). Motivational factors influencing return to work. *Journal of Applied Rehabilitation Counselling*, *20*(2), 14-17.

49. Hammond, A. (2008). Rehabilitation in musculoskeletal diseases. *Best Practices and Research Clinical Rheumatology*, *22*(3), 435-449.

50. Shaw, L., Segal, R., Polatajko, H., & Harburn, K. (2002). Understanding return to work behaviours: Promoting the importance of individual perceptions in the study of return to work. *Disability and Rehabilitation*, *24*, 185-195.

51. Lacaille, D., Sheps, S., Spinelli, J. J., Chalmers, A., & Esdaile, J. M. (2004). Identification of modifiable work-related factors that influence the risk of work disability in rheumatoid arthritis. *Arthritis and Rheumatism-Arthritis Care and Research*, *51*(5), 843-852.

52. Murphy, G. C., & Young, A. (2005). Employment participation following spinal cord injury: Relation to selected participant demographic, injury and psychological characteristics. *Disability and Rehabilitation*, *27*(21), 1297-1306.

53. Blustein, D. L. (2008). The role of work in psychological health and well-being: A conceptual, historical, and public policy perspective. *American Psychologist*, *63*(4), 228-240.

54. Ranjan, R. (2004). Job loss and chronic illness: A situation of double jeopardy. In R. Roy (Ed.), *Chronic pain, loss and suffering* (pp. 43-61). Toronto: University of Toronto Press.

55. Waziak, R., Young, A. E., Roessler, R. T., McPherson, K. M., van Poppel, M. N. M., & Anema, J. R. (2007). Measuring return to work. *Journal of Occupational Rehabilitation*, *17*, 766-781.

56. Young, A. E., Roessler, R. T., Waziak, R., McPherson, K. M., van Poppel, M. N. M., & Anema, J. R. (2005). A developmental conceptualization of return to work. *Journal of Occupational Rehabilitation*, *15*, 557-568.

57. Lecomte, C., & Savard, R. (2006). *Les effets d'une intervention de counseling sur la réadaptation de travailleurs accidentés à risque de chronicité*. Retreived from http://www.irsst.qc.ca/media/documents/PubIRSST/RR-448.pdf.

58. Kerns, R. D., Turk, D. C., & Rudy, T. E. (1985). The West Haven-Yale Multidimensional Pain Inventory. *Pain*, *23,* 345-356.

59. Ripon, A., & François, P. H. (1993). Mobiliser les ressources humaines: Implication au travail et changement organisationnels. *Revue Européenne de Psychologie Appliquée*, *43*(1), 27-30.

60. Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II.* San Antonio, TX: Psychological corp.

61. Corbière, M., Bonneville-Roussy, A., Franche, R.-L., Coutu, M. F., Choinière, M., Durand, M. J., & Boulanger, A. (in press). Further validation of the BDI-II among people with chronic pain originating from musculoskeletal disorders. *Clinical Journal of Pain*.

62. Harris, C. A., & D'Eon, J. L. (2008). Psychometric properties of the Beck Depression Inventory-second edition (BDI-II) in individuals with chronic pain. *Pain, 137*(3), 609-622.

63. Spielberger, C. D., Gorsuch, R. L., & Lushene, R. D. (1970). *Manual for the state-trait anxiety inventory*. Palo Alto, CA: Consulting Psychologists Press.

64. Bergeron, J. (1987). State-trait anxiety in french-english bilinguals: Cross-cultural considerations. In C. D. Spielberger & C. Diaz-Guerrero (Eds.), *Cross-cultural anxiety, volume* 2 (pp. 157-176). New-York, NY: McGraw-Hill.

65. Derogatis, L. (1993). *BSI: Brief Symptom Inventory. Administration, scoring, and procedures manual.* USA: NCS Pearson inc.

66. Falsetti, S. A., Resnick, H. S., Resick, P. A., & Kilpatrick, D. G. (1993). The modified PTSD symptom scales: A brief self-report measure of posttraumatic stress disorder. *The Behaviour Therapist*, *16*(6), 161-162.

67. Elhai, J. D., Lindsay, B. M., Gray, M. J., Grubaugh, A. L., North, T. C., & Fruch, B. C. (2006). Examining the uniqueness of frequency and intensity symptom ratings in posttraumatic stress disorder assessment. *The Journal of Nervous and Mental Disease*, *194* (12), 940-944.

68. Budd, R. J., & Rollnick, S. (1996). The structure of the Readiness to Change Questionnaire: A test of Prochaska & DiClemente's transtheoritical model. *British Journal of Health Psychology*, *1*, 365-376

69. Jensen, M. P., Nielson, W. R., Romano, J. M., & Hill, M. L., & Turner, J. A. (2000). Further evaluation of the pain stages of change questionnaire: Is the transtheoritical model of change useful for patients with chronic pain? *Pain*, *86*, 255-264.

70. Pantalon, M. V., & Swanson, A. J. (2003). Use of the university of Rhode Island Change assessment to measure motivational readiness to change in psychiatric and dually diagnosed individuals. *Psychology of Addictive Behaviors*, *17*(2), 91-97.

71. Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistic, 4th ed*. Boston: Allyn and Bacon.

72. Homers, D. W., & Lemeshow, S. (1989). *Applied logistic regression*. New York: Wiley.

73. Perneger, T. V. (1998). What's wrong with Bonferroni adjustments. *British Medical Journal, 316,* 1236-1238.

74. Rothman, K. J. (1990). No adjustments are needed for multiple comparisons. *Epidemiology*, *1*(1), 43-46.

75. Crook, J., Moldofsky, H., & Shannon, H. (1998). Determinants of disability after a work related musculoskeletal injury. *The Journal of Rheumatology, 25*(8), 1570-1577.

76. Gatchel, R. J., Polatin, P. B., & Mayer, T. G. (1995a). The dominant role of psychosocial risk factors in the development of chronic low back pain disability. *Spine, 20*, 2702-2709.

77. Soucy, I., Truchon, M., & Cote, D. (2006). Work-related factors contributing to chronic disability in low back pain. *Work, 26*, 313-326.

78. Turner, J. A., Franklin, G., Fulton-Kehoe, D., Sheppard, L., Wickizer, T. M., Wu, R., Gluck, J. V., & Egan, K. (2006). Worker recovery expectations and fear-avoidance predict work disability in a population-based workers' compensation back pain sample. *Spine, 31*(6), 682-689.

79. Bot, S. D. M., van der Waal, J. M., Terwee, C. B., van der Windt, D. A. W. M., Bouter, L. M., & Dekker, J. (2005a). Course and prognosis of elbow complaints: A cohort study in general practice. *Annals of the Rheumatic Diseases*, *64*, 1331-1336.

80. van der Waal, J. M., Bot, S. D. M., Terwee, C. B., van der Windt, D. A. W. M., Scholten, R. J. P. M., Bouter, L. M. & Dekker, J. (2005). Course and Prognosis of Knee Complaints in General Practice. *Arthritis & Rheumatism (Arthritis Care & Research), 53* (6), 920-930.

81. Dionne, C. E., Bourbonnais, R., Fremont, P., Rossignol, M., Stock, S. R., Nouwen, A., Larocque, I., & Demers, E. (2007). Determinants of "return to work in good health" among workers with back pain who consult in primary care settings: A 2-year prospective study. *European Spine Journal, 16*, 641-655.

82. Atlas, S. J., Chang, Y., Kammann, E., Keller, R. B., Deyo, R. A., & Singer, D. E. (2000). Long-term disability and return to work among patients who have a herniated lumbar disc: The effect of disability compensation. *The Journal of Bone and Joint Surgery, 82*(1), 4-15.

83. Gallagher, R. M., Williams, R. A., Skelly, J., Haugh, L. D., Rauh, V., Milhous, R., & Frymoyer, J. (1995). Workers' Compensation and return-to-work in low back pain. *Pain, 61*, 299-307.

84. Reiso, H., Nygard, J. F., Jorgensen, G. S., Holanger, R., Soldal, D., & Bruusgaard, D. (2003). Back to work: Predictors of return to work among patients with back disorders certified as sick. *Spine, 28*(13), 1468-1474.

85. van der Giezen, A. M., Bouter, L. M., & Nijhuis, F. J. N. (2000). Prediction of return to work of low back pain patients sicklisted for 3-4 months. *Pain, 87*, 285-294.

86. Franche, R. L., Baril, R., Shaw, W., Nicholas, M., & Loisel, P. (2005). Workplace-based return-to-work interventions: Optimizing the role of stakeholders in implementation and research. *Journal of Occupational Rehabilitation*, *15*(4), 525-542.

87. Krause, N., Dasinger, L. K., & Neuhauser, F. (1998). Modified work and return to work: A review of the literature. *Journal of Occupational Rehabilitation*, *8*(2), 113-139.

88. William, R. M., Wetmorland, M., Schmuck, G., & Creen, M. (2006). A systematic review of workplace rehabilitation interventions for work-related low back pain. *International Journal of Disability Management Research*, *1*(1), 21-30.

89. Fransen, M., Woodward, M., Norton, R., Coggan, C., Dawe, M., & Sheridan, N. (2002). Risk factors associated with the transition from acute to chronic occupational back pain. *Spine, 27*(1), 92-98.

90. van der Weide, W. E., Verbeek, J. H., Salle, H. J A., & van Dijk, F. J. H. (1999). Prognostic factors for chronic disability from acute low-back pain in occupational health care. *Scandinavian Journal of Work and Environmental Health, 25*(1), 50-56.

91. Storheim, K., Brox, J. I., Holm, I., & Bo, K. (2005). Predictors of return to work in patients sick listed for sub-acute low back pain: A 12-month follow-up study. *Journal of Rehabilitation Medicine, 37, 365-371.*

92. Heymans, M. W., de Vet, H. C. W., Knol, D. L., Bongers, P. M., Koes, B. W., & van Mechelen, W. (2006). Workers' beliefs and expectations affect return over 12 Months. *Journal of Occupational Rehabilitation, 16*, 685-695.

93. Hogg-Johnson, S., & Cole, D. C. (2003). Early prognostic factors for duration on temporary total benefits in the first year among workers with compensated occupational soft tissue injuries. *Occupational and Environmental Medicine, 60*, 244-253.

94. Dunn, K. M., & Croft, P. R. (2006). The importance of symptom duration in determining prognosis. *Pain*, *121*, 126-132.

95. Linton, S. J., Gross, D., Schultz, I. Z., Main, C., Côté, P., Pransky, G., & Johnson, W. (2005). Prognosis and identification of workers risking disability: Research issues and directions for future research. *Journal of Occupational Rehabilitation*, *15*(4), 459-474.

96. Schultz, I. Z., Crook, J., Meloche, G. R., Berkowitz, J., Milner, R., Zuberbier, O. A., & Meloche, W. (2004). Psychosocial factors predictive of occupational low-back disability: Towards development of a return-to-work model. *Pain, 107*, 77-85.

97. Turner, J. A., Franklin, G., Fulton-Kehoe, D., Sheppard, L., Wickizer, T.M., Wu, R., Gluck, J. V., Egan, K., & Stover, B. (2007). Early predictors of chronic work disability associated with carpal tunnel syndrome: A longitudinal workers' compensation cohort study. *American Journal of Industrial Medicine, 50*, 489-500.

98. Bush, H., Goransson, S., & Melin, B. (2007). Self-efficacy beliefs predict sustained long-term sick absenteeism in individuals with chronic musculoskeletal pain. *World Institute of Pain, 7*(3), 234-240.

99. Cole, D. C., Mondloch. M. V., & Hogg-Johnson, S. (2002). Listening to injured workers: How recovery expectations predict outcomes - a prospective study. *Canadian Medical Association Journal, 166*(6), 749-754.

100. Fleten, N., Johnsen, R., & Forde, O. H. (2004). Length of sick leave – Why not ask the sick-listed? Sick-listed individuals predict their length of sick leave more accurately than professionals. *BMC Public Health*, *4*, 46. doi: 10.1186/1471-2458-4-46

101. McFarlane, A. C., & Girolamo, G. (1996). The nature of traumatic stressors and the epidemiology of posttraumatic reactions. In B.A. Van Der Kolk, A. C. McFarlane & L. Weisaeth (Eds), *Traumatic stress : The effcts of overwhelming experience on mind, body and society* (pp. 129-154). New York, NY: The Guilford Press.

102. Strauser, D. R., Lustig, D. C., Cogdal, P. A., & Uruk, A. C. (2006). Trauma symptoms: Relationship with career thoughts, vocational identity and developmental work personality. *The Career Development Quaterly*, *54*, 346-360.

103. Turk, D. C., & Monarch, E. S. (2002). Biopsychosocial perspective on chronic pain. In D.C. Turk & R.J. Gatchel, (Eds.), *Psychological approaches to pain management: A practitioner's handbook* (2nd Ed.) (pp. 3-29). New York, NY: Guilford Press.

104. Banks, S. M., & Kerns, R. D. (1996). Explaining high rates of depression in chronic pain: A diathesis-stress framework. *Psychological Bulletin*, *119*, 95-110.

105. Currie, S. R., & Wang, J. (2004). Chronic back pain and major depression in the general Canadian population. *Pain*, *107*, 54-60.

106. Bultmann, U., Franche, R. L., Hogg-Johnson, S., Cote, P., Lee, H., Severin, C., Vidmar, M., & Carnide, N. (2007). Health status, work limitations, and return-to-work trajectories in injured workers with musculoskeletal disorders. *Quality of Life Research*, *16*(7), 1167-1178.

107. Littell, J. H., & Girvin, H. (2002). Stages of change: A critique. *Behavior Modification*, *26*(2), 223-273.

108. Project MATCH Research Group (1997). Matching alcoholism treatment to client heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol, 58*, 7-29.

109. Dijkstra, A. (2005). The validity of the stages of change model in the adoption of the self-management approach in chronic pain. *Clinical Journal of Pain*, *21*(1), 27-37.

110. Franche, R.-L., Corbière, M., Lee, H., Breslin, F. C., & Hepburn, C. G. (2007). The readiness for return-to-work (RRTW) scale: Development and validation of a self-report staging scale in lost-time claimants with musculoskeletal disorders. *Journal of Occupational Rehabilitation*, *17*, 450-472.

111. Nordenmark, M., & Strandh, M. (1999). Towards a sociological understanding of mental well-being among the employed: The role of economic and psychosocial factors. *Sociology*, *33*(3), 577-597.

112. Rantakeisu, U., & Jönsson, L. R. (2003). Unemployment and mental health among white-collar workers – a question of work involvement and financial situation? *International Journal of Social Welfare*, *12*, 31-41.

113. Shamir, B. (1986). Protestant work ethic, work involvement and the psychological impact of employment. *Journal of Occupational Behaviour*, *7*, 25-38.

114. Gatchel, R. J., & Dersh, J. (2002). Psychological disorders and chronic pain: Are there cause-and-effect relationships? In D. C. Turk & R. J. Gatchel (Eds). *Psychological approaches to pain management: A practitioner's handbook* (pp. 30-51). New York, NY: Guilford Press.

115. van den Heuvel, S. G., Ariens, G. A. M., Boshuizen, H. C., Hoogendoorn, W. E., & Bongers, P. M. (2004). Prognostic factors related to recurrent low-back pain and sickness absence. *Scandinavian Journal of Work Environment and Health, 30*(6), 459-467.

116. Suter, P. B. (2002). Employment and litigation: Improved by work, assisted by verdict. *Pain*, *100*, 249-257.

117. Gallagher, R. M., Rauh, V., Haugh, L. D., Milhous, R., Callas, P. W., Langelier, R., McClallen, J. M., & Frymoyer, J. (1989). Determinants of return-to-work among low back pain patients. *Pain, 39*, 55-67.

118. Landers, M. R., Cheung, W., Miller, D., Summons, T., Wallman, H. W., McWhorter, J.W., & Druse, T. (2007). Worker's compensation and litigation status influence the functional outcome of patients with neck pain. *Clinical Journal of Pain*, *23*(8), 676-682.

119. Baldwin, M. L., & Butler, R. J. (2006). Upper extremity disorders in the workplace: Costs and outcomes beyond the first return to work. *Journal of Occupational Rehabilitation*, *16*, 303-323.

120. Tunks, E. R., Crook, J., & Weir, R. (2008). Epidemiology of chronic pain with psychological comorbidity: Prevalence, risk, course and prognosis. *Canadian Journal of Psychiatry*, *53*(4), 224-234.

121. Pengel, L. H. M., Herbert, R. D., Maher, C. G., & Refshauge, K. M. (2003). Acute low back pain: A systematic review of its prognosis. *British Medical Journal*, *327*(7410), 323-325.

122. Wasiak, R., Pransky, G., & Webster, B. S. (2003). Methodological challenges in studying recurrence of low back pain. *Journal of Occupational Rehabilitation*, *13*, 21-31.

123. Altmaier, E. M., Russell, D. W., Kao, C. F., Lehmann, T. R., & Weinstein, J. N. (1993). Role of self-efficacy in rehabilitation outcome among chronic low back pain patients. *Journal of Counselling Psychology*, *40*(3), 335-339.

124. Marks, R., Allegrante, J. P., & Lorig, K. (2005a). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part I). *Health Promotion Practice*, *6*(2), 37-43.

125. Marks, R., Allegrante, J. P., & Lorig, K. (2005b). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part II). *Health Promotion Practice*, *6*(2), 148-156.

126. Smarr, K. L., Parker, J. C., Wright, G. E., Stucky-Ropp, R. C., Buckelew, S. P., Hoffman, R. W., O'Sullivan, F. X., & Hewett, J. E. (1997). The importance of enhancing self-efficacy in rheumatoid arthritis. *Arthritis Care and Research*, *10*(1), 18-26.

127. Labriola, M., Lund, T., Christensen, K. B., Albertsen, K., Bültmann, U., Jensen, J. N., & Villadsen, E. (2007). Does self-efficacy predict return-to-work after sickness absence? A prospective study among 930 employees with sickness absence for three weeks or more. *Work*, *29*, 23-238.

128. Baril, R., Berthelette, D., & Massicotte, P. (2003). Early return to work of injured workers: Multidimensional patterns of individual and organizational factors. *Safety Science*, *41*, 277-300.

129. Van Duijn, M., & Burdof, A. (2008). Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. *Journal of Rehabilitation Medicine*, *40*, 576-581.

Discussion générale et conclusion

Le décret par l'Organisation Mondiale de la Santé (OMS) que les années 2000-2010 seraient la « décennie des os et des articulations » témoigne de l'importance accordée à la problématique des TMS (66). La présente étude s'insère donc dans un courant de recherche en plein essor, soit celui de l'étude des déterminants de la douleur et l'incapacité chronique. Les nombreuses recherches et recensions des écrits au cours des 25 dernières années n'ont cependant pas permis de dégager un portrait clair et fiable des variables contribuant au processus d'adaptation suite à une lésion musculo-squelettique, la nécessité de mieux comprendre cette problématique reste des plus pertinente.

À cette fin, cette recherche visait d'abord à identifier des variables significatives au processus de réadaptation à partir de plusieurs indicateurs d'adaptation, dont le retour au travail, puis à préciser des pistes d'intervention pertinentes. Pour ce faire, une recension systématique des écrits a d'abord été effectuée afin de dresser un portrait d'ensemble de ce domaine de recherche afin d'identifier les facteurs pronostiques les plus fiables à partir d'une perspective biopsychosociale. Dans un deuxième temps, une étude empirique portant sur un échantillon de travailleurs accidentés a visé la validation de facteurs pronostiques en considérant des prédicteurs pertinents, dont certains sont peu étudiés.

Dans cette section, nous allons d'abord faire un bref résumé de chacun des deux articles constituant cette thèse. Par la suite, nous aborderons quelques considérations théoriques et cliniques découlant des résultats obtenus. Enfin, les forces et les limites de cette recherche seront détaillées et quelques pistes de recherches futures seront offertes.

1. Retour sur les principaux résultats

1.1 Synthèse de l'article 1 : *Biopsychosocial predictors of prognosis in musculoskeletal disorders: A systematic review of the literature*

Le premier article consista en une recension des études prospectives portant sur des personnes souffrant d'une lésion au niveau du système musculo-squelettique. L'objectif visé a été l'identification des déterminants les plus fiables des multiples impacts liés à la douleur musculo-squelettique. Cent cinq études prospectives ayant adopté des méthodes statistiques multivariées furent d'abord identifiées. Parmi celles-ci, 68 ont adopté une approche biopsychosociale. L'analyse des résultats des cent cinq études nous a permis d'identifier les facteurs pronostiques associés aux multiples impacts de la lésion musculo-squelettique en terme de réinsertion professionnelle, d'incapacités physiques, de douleur, de qualité de la vie, de détresse psychologique et de rechute. Dans un deuxième temps, l'analyse de la qualité méthodologique des 68 études ayant adopté un modèle biopsychosocial nous a permis d'établir le niveau d'évidence pour chacun des déterminants étudiés.

Trois principales conclusions se dégagent de cette analyse. 1) Peu de variables généralement considérées comme des facteurs de risque importants semblent être des indices fiables de l'adaptation suite à une lésion musculo-squelettique. À partir des études multivariées, la majorité de ces facteurs dits de risque n'ont soit pas de relations significatives avec les indices d'adaptation ou au mieux des liens peu fiables et fluctuants ou encore n'arrivent pas à se démarquer de déterminants variés. 2) Parmi les variables de nature médicale, la durée des symptômes et la comorbidité constituent des variables significatives de prédiction de l'adaptation. Cependant les facteurs pronostiques les plus fiables de l'adaptation démontrant un niveau d'évidence élevé, sont les variables de risque psychosociaux. Plus spécifiquement, il s'agit des attentes de rétablissement de la capacité à retourner au travail, des stratégies d'adaptation (coping), de la somatisation et de certaines procédures de gestion intégrée des incapacités telles que les travaux légers et les accommodations en milieu de travail. 3) Peu influencés par la durée des symptômes, les facteurs psychosociaux semblent toutefois agir dès les premières phases de chronicité.

Ces résultats viennent souligner l'importance et l'influence déterminante des facteurs psychosociaux dans le processus de réadaptation. Plus spécifiquement, au-delà des facteurs médicaux, ces résultats suggèrent que des facteurs comme les attentes de rétablissement, l'utilisation de stratégies d'adaptation flexibles combinées à des pratiques ajustées de gestion intégrée des incapacités jouent un rôle déterminant dans le processus de réadaptation de sujets aux prises avec des troubles musculo-squelettique. D'importantes implications pour l'intervention et la formation en découlent.

1.2 Synthèse de l'article 2 : *Biopsychosocial determinants of work outcomes of occupationally injured workers receiving compensation: A prospective study*

L'objectif du deuxième article a été l'identification des déterminants biopsychosociaux de l'engagement dans un processus de retour au travail. Une étude empirique a donc été menée auprès de 62 travailleurs victimes d'une lésion professionnelle au niveau musculo-squelettique, recevant une indemnité de revenu à la CSST et ayant été suivis pendant 8 mois. Les objectifs ont visé d'une part, la validation de facteurs de risque biopsychosociaux potentiels déjà reconnus mais pour lesquels il n'existe toujours pas de consensus scientifique. D'autre part, les objectifs ont visé l'exploration de la capacité prédictive de facteurs de risque souvent négligés, voire, ignorés dans ce domaine de recherche.

Les résultats obtenus démontrent d'une part l'importance des facteurs biopsychosociaux dans la prédiction de l'engagement dans un processus de retour au travail. En effet, les travailleurs accidentés plus engagés dans un processus de retour au travail sont des hommes, moins âgés, qui ont des attentes plus positives quant à leur capacité à retourner au travail, ils accordent plus d'importance au travail dans leur vie, ils perçoivent favorablement la qualité de leurs relations avec leurs collègues avant l'accident, ils manifestent moins de symptômes post-traumatiques et leur processus de consolidation médicale a été plus court. Les résultats fondées sur des analyses multivariées indiquent que les facteurs psychosociaux prédisent davantage l'engagement dans le processus de retour au travail que les autres variables. Parmi les variables peu étudiées voire, ignorées, mentionnons la valeur prédictive des symptômes post-traumatiques et de l'importance accordée au travail. Soulignons que les résultats indiquent que les facteurs prédictifs semblent évoluer avec le temps puisqu'ils diffèrent au suivi de 2 et de 8 mois et ce, malgré que notre échantillon soit constitué majoritairement de sujets déjà en phase chronique.

2. Perspectives théoriques et cliniques en fonction des principaux résultats

2.1 Les variables médicales

La recension des écrits, de même que l'article empirique a permis de valider la pertinence de facteurs pronostiques de nature médicale en tant que déterminants significatifs de la persistance de la douleur, soit la comorbidité, la durée des symptômes ainsi que la consolidation médicale.

Plusieurs articles soulignent qu'au sein de la population d'individus souffrant de TMS, une importante proportion manifeste des douleurs multiples au niveau du système musculo-squelettique (67, 68, 69, 70, 71), sans toutefois répondre aux critères d'une douleur généralisée (67). De plus, cette population semble fréquemment aux prises avec d'autres types de maladies (par ex. des troubles respiratoires, cardiovasculaires ou autres affections chroniques) (72, 73, 74). Sans en connaître les causes ni les mécanismes, on constate que certaines conditions physiques semblent plus associées aux douleurs lombalgique (72, 74). Nos résultats confirment l'impact négatif d'affections musculo-squelettiques comorbides sur la persistance de la douleur. Par ailleurs, la présence de maladies non reliées au système musculo-squelettique ne prédit pas l'évolution de la douleur. On peut observer que les affections secondaires examinées dans les études se manifestent de façon variable. On peut croire que leur présence concomitante aux TMS risque d'entraîner une évolution également variable des symptômes.

Par ailleurs, il est possible que le nombre d'affections comorbides puisse être davantage déterminant de l'évolution des symptômes que le type (75, 76). En effet, la présence de plusieurs conditions comorbides risque fort de mettre davantage à l'épreuve les capacités d'adaptation d'un individu et augmenter les risques de détérioration de ces symptômes. Un nombre plus élevé d'affections physiques secondaires semblent effectivement associé à des conséquences négatives en terme de douleur et incapacités, de même qu'une sollicitation de soins médicaux plus grande (69, 71, 77). Il semble donc important de tenir compte de la comorbidité compte tenu que la majorité des TMS ne présentent pas de cause identifiable (73) afin de maximiser les chances de succès en contexte de réadaptation. Selon plusieurs auteurs, intervenir de manière spécifique sur une seule région affligée par la douleur, alors que le patient présente plusieurs autres sièges de douleur, risque de nuire au processus de réadaptation (67). En n'accommodant que les limitations liées à une partie des affections musculo-squelettiques, on risque de précipiter la détérioration d'autres symptômes (68) et miner les efforts de réadaptation ou pire encore d'aboutir à une rechute ouvrant la porte au processus de chronicité.

Par ailleurs, la durée des symptômes a toujours été considérée comme un facteur de risque important dans l'évolution des symptômes vers la chronicité. En ce qui concerne la réinsertion professionnelle, la majorité des travailleurs accidentés retourneront au travail à l'intérieur d'une semaine alors qu'environ 90% d'entre eux réintègreront leur milieu de travail dans une période d'un ou deux mois (78, 79). Il est par ailleurs reconnu que plus la durée d'absence du travail s'allonge, plus les chances d'un retour éventuel s'amenuisent. Il semble que moins de la moitié des travailleurs absent pour une durée de 6 mois retourneront au travail alors que la probabilité d'un retour suite à 18 à 24 mois d'absence serait quasi nulle (80, 81, 82). Il va de soi que l'intervention précoce est une intervention de choix. En effet, des résultats positifs sont observés quand cette intervention est mise en place (83, 84). Par ailleurs, certaines études ont démontré que parmi les individus souffrant de douleurs et d'incapacités chroniques, même depuis 18 à 24 mois, des interventions multidisciplinaires de réadaptation intégrées semblent mener à des résultats significatifs en terme de RAT, diminution de la douleur et de l'incapacité, de la recherche de soins de santé et des rechutes (84, 85, 86, 87). Toutefois une portion de sujets demeure en incapacité chronique malgré ces efforts de réadaptation. Nous connaissons encore trop peu les facteurs de risque de la persistance des symptômes propre à cette population (88).

Le premier article de cette thèse a démontré la valeur prédictive de la durée des symptômes mais seulement en lien avec la persistance de la douleur et non avec l'incapacité physique ou encore le retour au travail. Il est fort probable qu'au-delà de la durée des symptômes, d'autres variables jouent un rôle plus important dans l'adaptation du travailleur accidenté. Par exemple, l'évolution idiosyncrasique des multiples variables biopsychosociales avec le passage du temps, telles qu'une diminution du sentiment d'efficacité personnelle, le déconditionnement physique, et l'augmentation de la détresse psychologique explique probablement davantage l'évolution vers la chronicité que la simple durée des symptômes. Ceci est d'autant plus important à considérer lorsque les interventions de réadaptation à l'intérieur de système de compensation sont déterminées par un processus de consolidation médicale qui peut parfois retarder certaines interventions psychosociales nécessaires.

2.2 Les variables psychologiques

De toutes les variables identifiées dans l'article 1 et 2, les variables psychosociales, particulièrement psychologiques, semblent jouer un rôle prépondérant dans l'adaptation du travailleur accidenté.

Parmi les variables psychologiques, les attentes de rétablissement (sentiment d'efficacité personnelle) sont associées de manière constante au plus grand nombre d'indicateurs d'adaptation. Les études ayant examiné la valeur prédictive du sentiment d'efficacité personnelle ont généralement procédé à son opérationnalisation selon deux concepts fondamentaux définis par Bandura (89, 90), soit le sentiment d'efficacité personnelle et les attentes de résultats (91). Le sentiment d'efficacité personnelle réfère à la croyance qu'entretient une personne quant à sa capacité à adopter certains comportements (par ex. gestion de la douleur) qui mèneront aux résultats désirés. Par ailleurs, les attentes de résultats correspondent à la perception qu'à l'individu des conséquences possibles résultant de ses actions. Bien que ces deux concepts soient distincts, ils partagent une relation de réciprocité (92). En effet, les deux doivent manifestés un score élevé pour qu'un individu persiste dans ses efforts de surmonter une difficulté ou un défi (93).

Mitchell et al. (93) décrivent clairement l'impact de l'accident de travail et du système de compensation sur le sentiment d'efficacité personnelle d'un travailleur accidenté entraînant ainsi des risques d'évoluer vers la chronicité. Ils précisent comment certaines informations contradictoires, telles que 1) les incertitudes et incompréhensions face aux diagnostics médicaux parfois ambigus ou mal expliqués 2) les avocats mettant l'emphase sur l'incapacité du travailleur plutôt que ses capacités résiduelles afin d'obtenir une compensation maximum en situation de litige et d'autre part, 3) l'emphase mise par le conseiller sur la faisabilité d'un retour au travail le plus rapidement possible. Ces messages contradictoires peuvent semer la confusion chez le travailleur et affecter négativement son sentiment et ses attentes d'efficacité.

Bandura (89, 90) ne considère pas le sentiment d'efficacité personnelle comme un trait stable mais plutôt qu'il résulte des expériences de vie et est donc, par le fait même, modifiable. Il a identifié quatre sources d'information à même d'influencer le sentiment d'efficacité personnelle, soit l'expérience de maîtrise, l'expérience vicariante, la persuasion verbale et les états physiologiques et affectifs. Par conséquent, le sentiment d'efficacité personnelle pourrait être augmenté au cours du processus de réadaptation par l'utilisation de certaines stratégies telles que l'apprentissage vicariant, l'expérience de maîtrise, le renforcement et des techniques de réductions de l'anxiété (94, 95). Il a d'ailleurs été démontré à plusieurs reprises que diverses interventions sont efficaces afin d'influencer positivement le sentiment d'efficacité personnelle et peuvent mener à l'amélioration de plusieurs indicateurs d'adaptation tels que le niveau de douleur, le niveau de fonctionnement physique et psychologique, la qualité de la vie et le retour au travail (96, 97, 98, 99, 100, 101). Certains soulèvent l'importance pour le conseiller de permettre au travailleur accidenté de vivre des expériences de succès au fil du processus de réadaptation afin de favoriser l'augmentation de son sentiment d'efficacité personnelle (91). Un des éléments considérés essentiel de l'intervention auprès de personnes souffrant de TMS est d'amener celles-ci à être un agent actif de la gestion de leur condition. En ce sens, le sentiment d'efficacité personnelle est considéré comme une variable déterminante de ces efforts d'auto-régulation (92, 102). Comme il a été démontré à plusieurs reprises, diverses interventions sont efficaces afin d'influencer positivement le sentiment d'efficacité personnelle puisqu'elles ont mené à l'amélioration de plusieurs indicateurs d'adaptation. Il semble donc particulièrement important que cette variable soit prise en compte en contexte de réadaptation.

Les stratégies d'adaptation (coping) ont également été identifiées comme variables significatives prédisant la persistance de la douleur et l'incapacité. Bien que les stratégies d'adaptation ont parfois été considérées comme un trait stable (103), l'approche transactionnelle ou situationnelle constitue de plus en plus le paradigme dominant (104). Il est défini comme « les efforts cognitifs et comportementaux en vue de gérer des demandes internes ou externes spécifiques évaluées comme étant ardues ou dépassant les capacités d'une personne » (105; p. 141). Diverses opérationnalisations des stratégies ont été proposées jusqu'à maintenant, soit celles centrées sur l'émotion (efforts déployés afin de diminuer le stress et les émotions négatives engendrées par la situation) ou la résolution de problème (efforts déployés afin de modifier la situation stressante) (103). D'autres les catégorisent en stratégies passives (l'individu renonce à gérer sa douleur et remet la responsabilité aux autres) ou actives (l'individu prend une part de responsabilité dans la gestion de sa douleur ou tente de fonctionner malgré sa douleur) (106), de même que les stratégies d'évitement (l'individu tente d'éviter la situation stressante) (107).

Les travailleurs accidentés aux prises avec un TMS associé aux multiples conséquences dans sa vie (perte d'emploi, douleur, limitations fonctionnelles, attrition du réseau social, etc.) font face à d'importantes difficultés. La manière avec laquelle un individu fait face à ces défis affectera significativement son niveau d'adaptation. Les stratégies d'adaptation sont généralement considérées comme une variable médiatrice importante entre des événements de vie difficiles et l'adaptation de l'individu (108). Plusieurs études semblent démontrer que les stratégies d'adaptation actives sont associées à une meilleure adaptation que les stratégies passives, entre autre au sein de populations souffrant de douleurs chroniques (109, 110) de même que de patients souffrant de diverses conditions telles que l'arthrite rhumatoïde (111), sclérose en plaque (112), amputations (113), infarctus (114) et le cancer de la prostate (115). Par exemple, il a été rapporté qu'un niveau élevé de stratégies centrées sur l'émotion et un faible niveau de stratégies centrées sur la résolution de problème avant un événement traumatique est prédictif du développement d'un syndrome de stress post-traumatique (116). Les résultats de notre recension des écrits viennent également soutenir ces conclusions alors que les individus souffrant de TMS et utilisant des stratégies d'adaptation passives manifestent davantage de douleur et d'incapacités.

Il a été démontré que les stratégies d'adaptation sont susceptibles d'être modifiées et que le développement de stratégies plus adaptées peut avoir un impact favorable sur l'adaptation de l'individu, telle qu'une diminution de la douleur et une plus forte tolérance à celle-ci (117). Par ailleurs, il est généralement reconnu que certaines stratégies ou catégories de stratégies ne sont pas systématiquement adaptées ou inadaptées. En effet, leur utilité peut varier selon le temps et le contexte de chaque personne. Par ailleurs, des stratégies utilisées exclusivement au détriment d'autres stratégies peuvent devenir problématiques (103; p.111). Ainsi, des stratégies centrées sur l'émotion peuvent être utiles lorsqu'un individu fait face à une situation sur laquelle il ne peut influer (103). De la même façon, certaines stratégies d'évitement peuvent parfois avoir un impact positif à court terme, mais deviendront toutefois inadaptées si elles persistent et font obstacle à d'autres comportements plus adaptés (109, 211). Ce qui est donc garant de l'adaptation de l'individu est davantage la flexibilité des stratégies utilisées (119).

D'autre part, la présence de somatisation s'est aussi avérée un facteur important dans la prédiction de l'incapacité. La somatisation a été traditionnellement conceptualisée de deux manières (120). D'une part, elle a été définie comme la manifestation somatique prédominante, voire, exclusive d'un trouble psychologique telles que la dépression ou l'anxiété. D'autre part, on y réfère en tant qu'un niveau important de symptômes médicaux inexpliqués se manifestant dans plusieurs systèmes physiologiques. Il semble toutefois y avoir un consensus grandissant qu'il faille adopter une perspective biopsychosociale de la douleur et des symptômes inexpliqués et non une vision dualiste quant à son étiologie (121, 122). Malgré ces conceptualisations, la somatisation implique toujours la présence de symptômes somatiques ne pouvant être expliqués par une affection médicale (120). La somatisation implique également une attention marquée de l'individu sur les stimuli sensoriels internes qu'il ressent de manière intense et perçoit comme étant pathologiques (123). Elle implique aussi souvent le déni par l'individu de toute explication de nature psychosociale à ses symptômes et une augmentation croissante de symptômes inexpliqués (124). Par conséquent, ces individus tendent à utiliser plus souvent les ressources du réseau de santé afin de trouver une réponse médicale à leurs symptômes (125).

Un pourcentage élevé de travailleurs en arrêt de travail prolongé présentent des symptômes somatiques inexpliqués et recherchent des soins de santé primaires (120, 121, 126). La présence de somatisation a été associée avec un risque plus élevé d'évoluer vers une douleur chronique chez des patients en phase de douleur aiguë (124). Les études recensées dans le premier article soutiennent la valeur pronostique de la somatisation dans la détermination de l'incapacité physique. Par contre, aucune étude recensée n'a porté sur un échantillon de sujets en phase aiguë, il ne nous est donc pas possible de valider le rôle de la somatisation dans la transition d'un état aiguë vers un état chronique. De plus, il faut être prudent dans l'interprétation de ces résultats puisque les études recensées ont défini la présence de somatisation par l'existence de plusieurs symptômes somatiques. Cependant, la détermination de la présence ou non de somatisation implique qu'il faille exclure la présence d'une cause organique aux symptômes rapportés, ce qui peut parfois être difficile (120). Il a toutefois été démontré que la présence de multiples symptômes somatiques dérangeants est liée à la présence d'une douleur incapacitante (127). Sans nécessairement conclure d'emblée à la présence de somatisation, ceci remet en lumière l'importance de s'attarder à la présence de la comorbidité lors du processus de réadaptation.

La somatisation semble étroitement liée à la présence de certains facteurs cognitifs et comportementaux, tels que les attributions et les comportements de douleur, bien que ces relations ne sont pas bien comprises (123). Brièvement, les comportements de douleur tels que définis par Mechanic (1985) correspondent aux façons par lesquelles une personne est à l'écoute de son corps, interprète et définit ses symptômes et entreprend des démarches afin de remédier à ses préoccupations somatiques, bien souvent via le réseau de santé (128). Ces comportements se classent généralement en 3 catégories, soit l'expression des symptômes, l'autorégulation de ceux-ci et la recherche de traitement (128). Lorsque la réponse aux symptômes est inadaptée, elle tend à se manifester de sous deux formes, soit par une minimisation ou un déni inapproprié pouvant mener à des comportements d'évitement ou encore via l'intensification ou l'amplification des symptômes et la somatisation. Ces deux modes de réponse peuvent toutefois mener à des comportements dysfonctionnels et l'adoption d'un rôle de malade (128). Certains suggèrent que les comportements de douleur jouent un rôle important dans le développement et l'évolution de symptômes inexpliqués (129).

Bien que ces résultats n'ont pas été élaborés au sein de l'article 1 compte tenu d'un niveau d'évidence plus faible, il s'est toutefois dégagé un niveau d'évidence modéré, appuyé par seulement 2 études, que les comportements de douleur prédisent l'incapacité fonctionnelle. Puisque qu'aucune cause physiologique spécifique ne peut être identifiée pour la majorité des TMS, il semble important de porter attention aux signes d'une présence de comportements de douleur inappropriés et de symptômes somatiques multiples et inexpliqués. Ceci pourrait permettre d'éviter d'entreprendre de multiples examens et traitements médicaux qui ne sont pas nécessaires et qui par le fait même risquent d'avoir des effets iatrogéniques (130). Ceci est d'autant plus significatif dans le contexte d'un système de compensation où des comportements de douleurs qui semblent disproportionnels par rapport aux données médicales objectives risquent d'être perçus comme une simulation en vue d'obtenir des gains secondaires (par ex. indemnité de remplacement de revenu).

Toutefois, Main & Waddell (131) mettent en garde contre de telles interprétations hâtives et suggèrent de tenir compte de la situation médicale et psychosociale globale de l'individu. En effet, Waddell (132) affirme que pour la plupart des gens, les comportements de douleurs, visant à communiquer aux autres ce qu'il ressentent, sont une réponse normale et proportionnée à leur condition physique. Lorsque ces réactions deviennent toutefois disproportionnelles à la condition physique réelle, cela peut mener à une augmentation de la douleur et de l'incapacité. Par ailleurs, il nous apparaît essentiel de valider l'expérience subjective du travailleur quant au sens qu'il donne à ses symptômes. Pour un travailleur attribuant ses symptômes à une cause médicale, mettre l'emphase sur une explication psychologique risquerait de mener à une rupture thérapeutique et un rejet des interventions (122, 133). De plus, l'attribution hâtive des symptômes du travailleur à une simulation volontaire risque fort de créer une situation d'opposition et la perte de la collaboration du travailleur au processus de réadaptation.

En ce qui concerne la psychopathologie, notre recension des écrits et notre étude empirique n'ont toutes deux pas été en mesure de valider la valeur prédictive des variables de dépression et d'anxiété sur le processus de retour au travail ou tout autre indicateur d'adaptation. Il faut noter qu'au niveau de notre recension des écrits, peu d'études ayant examiné le rôle de la psychopathologie sont de bonne qualité, particulièrement celles portant sur le retour au travail. Dans le cadre du deuxième article, il est toutefois surprenant de noter que les sujets engagés dans un processus de retour au travail rapportent des niveaux de dépression (échelle cognitive) plus élevés et significatifs au premier suivi. Ces résultats n'étaient seulement significatifs toutefois qu'au niveau des analyses univariées au suivi de 2 mois. À partir de considérations cliniques, on pourrait expliquer la manifestation de symptômes dépressifs comme une réaction normale au cours du processus d'adaptation où le travailleur accidenté tente d'accepter les pertes découlant des conséquences de sa lésion. Il est possible que les sujets pour lesquelles le travail revêt une importance plus grande soient à la fois plus déprimés face à leur incapacité de travailler (134, 135) mais soient également plus motivés à réintégrer le milieu de travail. Cela pourra dépendre entre autre des attentes d'efficacité qu'à l'individu quand à sa capacité retourner au travail. Il est alors possible que ce soit davantage la persistance des symptômes dépressifs qui aura un impact négatif sur le processus de réadaptation. De plus, les sujets n'endossent que faiblement les items cognitifs sur l'échelle de dépression et il est possible que seule la présence de symptômes dépressifs plus sévères nuise à la motivation des travailleurs et leur engagement dans un processus de retour au travail. Cette hypothèse serait à vérifier. Seule l'échelle des symptômes somatiques montrait des résultats plus élevés, bien que non significatifs, pour les travailleurs qui ne sont pas engagés dans un processus de RAT. Ceci n'est toutefois pas surprenant puisque les items somatiques tendent généralement à être endossés plus fortement chez les sujets souffrant de douleurs chroniques (136).

Par ailleurs, nos résultats empiriques démontrent quand même la pertinence de considérer la psychopathologie, plus particulièrement les symptômes post-traumatiques. Carlson (1997) démontre que l'accident de travail peut-être considéré comme un événement traumatique à partir de trois critères. Premièrement, l'événement doit être perçu comme menant à une douleur ou blessure physique, une douleur émotionnelle ou la mort. Deuxièmement, l'événement doit être soudain et perçu comme une menace immédiate de façon à ne pas permettre de déployer d'emblée des stratégies d'adaptation face à l'événement. Troisièmement, l'événement doit être perçu comme étant hors de contrôle pour l'individu (137). Un accident de travail répond souvent à ces 3 conditions puisque la réaction de l'individu est hautement subjective et dépend de la perception qu'il a de l'événement. Perception qui est elle-même déterminée par ses expériences passées. Compte tenu de la forte prévalence de symptômes post-traumatiques au sein de populations souffrant de douleur chronique (117, 138, 139, 140) et de leur association avec une perception de douleur plus intense ainsi qu'un niveau plus élevé d'incapacités fonctionnelles et de détresse psychologique (141, 142, 143, 144), il apparaît pertinent et important de documenter la présence de ces symptôme chez les travailleurs accidentés. Ceci pourra permettre d'orienter les interventions afin de les rendre davantage appropriées à leurs besoins. Par exemple, Strauser et al. (137) ont démontré l'impact négatif de symptômes post-traumatiques sur les pensées, comportements et attitudes face à la résolution de problème et la prise de décision reliée à la carrière. Ce qui pourrait être interprété par un conseiller comme une absence d'intérêt pour la réinsertion professionnelle ou une résistance, pourrait en fait provenir de symptômes post-traumatiques qui n'ont pas été identifiés. Davantage d'études sont toutefois nécessaires pour valider nos résultats et l'importance de cette variable auprès de travailleurs accidentés.

2.3 Les variables sociales et environnementales

Au niveau des variables environnementales, trois variables ont été identifiées comme signifiantes dans la prédiction de la réinsertion professionnelle, soit la gestion intégrée des incapacités (article 1), l'importance accordée au travail et le soutien en milieu de travail en fonction de la qualité perçue de la relation avec les collègues de travail (article 2).

La gestion intégrée des incapacités constitue une approche proactive en milieu de travail qui vise à fournir des interventions précoces afin de diminuer l'incidence des accidents de travail et limiter la gravité de l'incapacité et ce, en favorisant des efforts coordonnées entre le milieu de travail et les services de réadaptation afin de promouvoir le rétablissement et la réinsertion professionnelle (145, 146). L'objectif est d'intervenir afin de minimiser les obstacles en milieu de travail pouvant contribuer au développement de l'invalidité (147). Bien que plusieurs éléments composent les stratégies de gestion intégrée des incapacités (146), les quelques recensions des écrits ayant rapporté l'impact favorable de ces stratégies ne permettent généralement pas de préciser quelles stratégies sont les plus efficaces. Krause et al. (147) rapportent que des stratégies telles que les travaux légers, le retour en emploi graduel, les assignations temporaires et les accommodations de postes ont un impact positif sur le RAT et les coûts associés. De son côté, Franche et al. (148) ont aussi trouvé un niveau d'évidence de modéré à élevé que certaines stratégies telles qu'un contact précoce entre le travailleur et le milieu de travail, les offres d'accommodation de poste, le contact entre les professionnels de la santé et le milieu de travail et des adaptations ergonomiques en milieu de travail diminuent significativement les risques d'absence prolongée du travail. Williams et al. (149). De plus, ils rapportent que les accommodations de postes lorsque combinées avec des interventions cliniques peuvent réduire la douleur et l'incapacité. Ces recensions des écrits, tout comme la nôtre, n'ont pu préciser quelles sont les composantes essentielles de la gestion intégrée des incapacités bien que les accommodations de poste et les travaux légers semblent avoir un impact favorable sur le RAT.

Il est généralement reconnu et suggéré qu'il est préférable d'amener le travailleur accidenté à reprendre rapidement ses activités habituelles, entre autre le travail (150) afin de prévenir un déconditionnement physique et psychologique et le développement d'incapacités chroniques. Par conséquent, il n'est pas rare que lors du RAT, une part importante de travailleurs soit toujours aux prises avec certains symptômes de douleur et des limitations fonctionnelles (78). Il est donc important de ne pas placer le travailleur accidenté en situation où il sera sollicité au-delà de ses capacités afin d'éviter une rechute ou l'aggravation de ses symptômes. Un suivi serré des progrès de ce dernier afin d'assurer son rétablissement ainsi qu'un RAT optimal semble primordial (151). La collaboration entre tous les intervenants est également essentielle à l'efficacité des programmes de gestion intégrée des incapacités (152) et peut aider à la prévention d'une rechute éventuelle (153).

Deux autres facteurs reliés au travail ont été identifié comme déterminants significatifs, soit l'importance du travail et le soutien perçu par les collègues de travail. Le travail vient combler plusieurs besoins au plans économique, psychosocial ainsi que des besoins d'auto-détermination (154, 155). Les pertes résultant d'un accident de travail, couplées de douleur et de limitations fonctionnelles de même que d'un doute quant à la possibilité de pouvoir retourner au même emploi (ou même refaire le même type d'emploi), sont immenses. Les travailleurs accidentés démontrant un plus haut niveau d'engagement au travail ont tendance à souffrir davantage suite à une perte d'emploi (134, 135). La perception qu'a le travailleur accidenté du soutien provenant du milieu de travail peut l'aider à surmonter les obstacles qu'il rencontrera dans son processus de retour au travail. Plus particulièrement, le soutien des collègues et du superviseur sera un atout essentiel lors de la mise en place de stratégies de gestion des incapacités. Malgré que l'importance accordée au travail soit considérée comme un trait relativement stable, des chercheurs ont démontré qu'en période de chômage, des personnes peuvent combler leurs besoins via d'autres activités ou rôles et que l'importance accordée au travail peut diminuer (155). Il est possible que durant une période d'indemnisation qui perdure, le travailleur évolue vers un état d'incapacité chronique, se désaffilie du milieu de travail et adopte le rôle de malade (124). On peut alors penser que la diminution du sentiment d'efficacité personnelle et des attentes de résultats positives peut jouer un rôle important dans ce processus. Maintenir un lien avec le milieu de travail, favoriser un sentiment de soutien provenant du milieu de travail et entretenir des attentes positives quant à la capacité de retour au travail, combiner à des stratégies de gestion intégrée des incapacités, voilà les ingrédients essentiels du processus de réadaptation.

Les implications cliniques de ces résultats sont importantes, particulièrement dans un contexte comme celui de la CSST où les interventions en réadaptation des conseillers dépendent souvent de l'évolution du dossier médical. Plusieurs variables pertinentes de l'adaptation et sur lesquelles il est possible d'intervenir ont été identifiées. Dans un premier temps au niveau de la recension des écrits, le sentiment d'efficacité personnelle face au rétablissement, les stratégies d'adaptation (coping), la somatisation, les comportements potentiellement inadéquats de douleur et certaines procédures de gestion intégrées des incapacités ont été précisés. Dans l'étude empirique, le sentiment d'efficacité personnelle (attentes face à la capacité de retourner au travail), les symptômes post-traumatiques, les relations avec les collègues et l'importance du travail. L'importance des facteurs psychosociaux en phase aiguë indique la pertinence d'une intervention multidisciplinaire rapide tenant compte des facteurs de risque biopsychosociaux. La difficulté réside toutefois dans l'identification des sujets à risque. La présente étude a permis de contribuer à l'identification de variables déterminantes pour commencer à mieux cerner cette difficulté

2.4 Quelques considérations théoriques

Avec l'émergence de nouvelles technologies, la recherche en neurophysiologie offre des pistes d'explication touchant l'influence de facteurs contribuant au développement et maintien de douleurs chroniques, entre autre de symptômes dont la cause médicale ne peut être expliquée. Plusieurs mécanismes neurophysiologiques semblent associés à la présence et la persistance de la douleur (156, 157). Toutefois, nous ne nous attarderons brièvement qu'à l'un d'entre eux, soit la sensibilisation. Ce phénomène est défini comme une réactivité exagérée aux stimuli et est considéré comme un des mécanismes neurobiologiques possibles derrière la douleur musculaire (121). Il est reconnu que l'usage répété de synapses au niveau du système nerveux central peut mener à une plus grande efficacité synaptique (potentialisation). Ursin (121) explique qu'une fois ces connections neuronales activées, l'intensité du stimuli nécessaire à leur réactivation diminue et l'individu pourrait réagir à un événement stressant de moindre importance avec la même intensité. Ceci pourrait expliquer pourquoi certains individus semblent plus sensibles que d'autres à de multiples stimuli. Il ajoute enfin que la sensibilisation serait aussi un mécanisme sous-jacent à la somatisation de même que d'autres troubles comorbides tels que la dépression et certains troubles anxieux.

Par ailleurs, la théorie de l'attachement (158) ou encore la théorie de schémas (159) semblent également pertinente à l'explication de la difficulté d'adaptation de certaines personnes face à la douleur. À la base de ces deux théories se retrouve deux concepts similaires, soit les « représentations d'interactions généralisées » ou encore les « schémas ». Bowlby (158) postule que les individus développent à l'enfance des représentations mentales constituées d'attentes à propos de soi, des autres et de soi en relation aux autres. Pour sa part, Young (159) défini le schéma comme un patron stable et persistant de croyances et d'affects se développant à l'enfance, se construisant au cours de la vie et qui influençant la manière de percevoir le monde. Les schémas influenceraient l'attention que porte une personne à certaines informations, la façon d'interpréter les événements de vie auxquels elle fait face de même que ce qu'elle tend à retenir de ces expériences. Il est aussi convenu que les processus d'assimilation des expériences vécues agissent principalement hors du champ de conscience (158).

Comme le souligne Bowlby, les styles d'attachement et les représentations d'interactions généralisées qui en découlent se développent à l'enfance, se perpétuent au fil des expériences et ont un impact sur la santé mentale à l'âge adulte (160). Certaines recherches ont mis en évidence l'impact des styles d'attachement sur les symptômes post-traumatiques, la somatisation, les stratégies d'adaptation, les attributions, la recherche de soins de santé et la perception du soutien social par exemple (161, 162, 163). Plusieurs études démontrent aussi qu'on retrouve la présence d'événements de vie stressants ou traumatiques à l'enfance chez les sujets souffrant de psychopathologie comme la dépression (164), le syndrome de stress post-traumatique (165), la somatisation (166) et la douleur chronique (167). Il est possible de croire que cette relation provient des schémas ou représentations d'interactions généralisées qui se sont formées en partie suite à ces événements de vie passés et qui influencent la façon dont l'individu perçoit ses expériences futures et son environnement.

De plus, de nombreuses études ont également rapportés la présence de distorsions cognitives (par ex. catastrophisation, sur-généralisation, personnalisation, abstraction sélective) dans le traitement de l'information chez les individus souffrant de douleurs chroniques, particulièrement au niveau de l'attention, l'interprétation et la mémoire (117, 168). Ces distorsions cognitives ont également été reliées à la psychopathologie dont la dépression (117). Ces biais cognitifs sont le résultat de principes organisateurs. Les auteurs soulignent en particulier le rôle des schémas reliés à soi, à la douleur et à la maladie de même que leur interaction dans le développement de douleurs chroniques. Par exemple, il semble que les personnes ayant exclusivement des attributions somatiques pour leurs symptômes, n'ont pas d'attributions normalisatrices mais plutôt pathologiques. Ils se perçoivent hautement vulnérables et rapportent davantage de symptômes et de comportements inadaptés de douleur. Toutefois, les personnes manifestants des attributions psychologiques et somatiques de leurs symptômes rapporteraient moins de symptômes (169). Ces auteurs suggèrent que ce ne serait pas tant le type d'attribution mais plutôt l'exclusivité d'un type d'attribution et sa rigidité qui déterminerait la persistance des symptômes.

Certains parallèles peuvent être faits entre la potentialisation au niveau synaptique et la stabilité des schémas cognitifs. En ce sens, Ursin (170) propose de concevoir les distorsions cognitives comme une forme plus complexe de sensibilisation où un individu est davantage alerte aux stimuli anxiogènes et y réagit à un seuil moins élevé que la plupart des gens. Au-delà de poursuivre l'investigation des schémas inadaptés pouvant contribuer à la douleur et l'incapacité chronique, une piste de recherche potentielle serait d'explorer les interrelations entre les phénomènes physiologiques comme la sensibilisation et les schémas de même que l'impact bidirectionnel lorsque des changements sont induits chez l'un ou l'autre.

3. Forces et limites de la présente recherche

Un des mérites de la recension des écrits, au-delà du nombre imposant d'études incluses couvrant une période de 22 ans et sélectionnées à partir de critères rigoureux (études prospectives, analyses multivariées, variables biopsychosociales), a été d'abord de procéder à une analyse minutieuse de la qualité méthodologique de chacune des études. Puis de dégager le niveau d'évidence pour chacun des facteurs de risque étudiés. Le choix des critères de qualité méthodologique choisis s'est appuyé sur les critères utilisés par d'autres recensions de même que certaines suggestions de critères importants à considérer afin de minimiser les biais lors de recension des écrits (171). Même si certains critères retenus ont été moins stricts que ceux utilisés dans d'autres recensions, la difficulté à trouver un niveau d'évidence important pour la majorité des variables est d'autant plus éloquente. Si nous avions appliqué des critères plus sévères, il est fort probable qu'un nombre encore plus restreint de facteurs auraient démontré un niveau d'évidence élevé.

Par ailleurs, il faut interpréter avec prudence certaines conclusions appuyées sur un nombre limité d'étude. La nécessité de confirmer ces résultats par des études supplémentaires de qualité est évidente. Bien sûr, l'hétérogénéité des études dans ce domaine de recherche contribue aussi à la difficulté d'identifier un ensemble de facteurs de risque fiables. Bien que nos critères d'inclusion dans l'article 1 amenaient aussi une certaines hétérogénéité, cela a cependant eu l'avantage de nous permettre de brosser un large tableau de cette littérature et identifier certaines de ses lacunes. La dynamique complexe entre un nombre important de facteurs de risque déterminant l'adaptation suite à un TMS explique sûrement de manière importante la diversité des conclusions de recherche et la difficulté à identifier un ensemble relativement fiable de facteurs prédictifs.

Un autre apport significatif de cette étude a été de décrire le niveau d'évidence en fonction des phases de chronicité. Compte tenu du nombre limité d'études ayant portées sur des sujets en phase chronique, aucune variable n'a un fort niveau d'évidence et il a donc été difficile de dégager de réelles différences avec les sujets en phase aiguë, subaiguë et ceux en phase chronique. De plus, comme peu d'études ont stratifié leurs analyses en fonction des phases de chronicité, il devient difficile d'interpréter clairement les différences observées entre les sujets en phase aiguë, subaiguë et chronique. À la lumière des informations disponibles, il se dégage de manière générale que les facteurs de risque chez les sujets souffrant de TMS ne se distinguent pas de manière importante en fonction des phases de chronicité. Davantage d'études toutefois sont nécessaire afin de valider ce constat. Un deuxième constat d'importance est que les facteurs psychosociaux semblent également jouer un rôle dès les premières phases de chronicité. Ce résultat concorde d'ailleurs avec les conclusions d'une recension récente (172) ayant déterminé que les facteurs de risque contribuant au développement d'une incapacité chronique ne semblent pas changer de manière significative en fonction de la durée des symptômes et que les variables psychosociales contribuent dès la phase subaiguë à l'évolution vers la chronicité.

Les résultats du volet empirique de cette thèse viennent corroborer certaines des conclusions de notre recension des écrits, soit le rôle important des variables psychosociales dans l'adaptation suite à une lésion musculo-squelettique, tout particulièrement l'influence du sentiment d'efficacité personnelle. De plus, cette étude nous a également permis de valider la pertinence de tenir compte de deux variables qui n'avaient pas encore été étudié dans ce contexte, soit l'importance que prend le travail pour un individu et des symptômes post-traumatiques, comme facteurs pouvant influencer le processus d'adaptation professionnel. Toutefois, l'interprétation et la généralisation des résultats de notre étude empirique doivent être faites avec prudence et ces derniers devraient être confirmés à l'aide d'un échantillon de plus grande taille.

Enfin, la définition du retour au travail choisie dans cette étude, incluant soit un retour complet ou partiel, l'assignation de travaux légers mais aussi la recherche d'emploi et la participation à un projet de formation professionnelle a également pu influencer nos résultats. Idéalement, il aurait été souhaitable de pouvoir analyser séparément les sujets en recherche d'emploi ou en formation afin de voir si ces derniers se distinguent des autres sujets. Compte tenu de la taille de l'échantillon et du nombre de sujets dans ces catégories, cela n'a pu être fait. Dans plusieurs études, les sujets en formation ou en recherche d'emploi sont amalgamés aux sujets qui ne sont pas retournés en emploi. Toutefois, comme ces derniers sont tout de même engagés dans un processus en vue d'un retour au travail, il nous apparaissait plus pertinent de les associer à ceux ayant retourné au travail sous une forme ou une autre puisque cela semble témoigner d'une progression.

4. Pistes de recherche

Bien conscient que l'évolution vers la douleur et l'incapacité chronique est déterminée par une interaction complexe entre les facteurs de risque biologiques, psychologiques et sociaux (173), il est apparu malgré cela nécessaire, compte tenu de l'état des recherches actuelles, d'identifier la pertinence et la contribution indépendante de chaque facteur de risque. Nous avons donc rapporté les associations entre chaque variable prédictive et de résultat de manière indépendante. Toutefois, ces variables n'influencent pas seulement de manière autonome le processus d'adaptation de sujets souffrant de TMS et en faire une liste ne permet pas de comprendre ce processus dans toute sa complexité. De plus, les résultats de notre recension révèlent également que ce ne sont pas les mêmes facteurs de risque qui sont associés aux variables de résultats.

Le retour en emploi est souvent un aspect central du processus de réadaptation, tout particulièrement en contexte d'assurance, mais ne reflète pas la complexité de l'expérience d'adaptation du travailleur accidenté suite à une lésion musculo-squelettique. Ce processus implique le rétablissement à plusieurs niveaux au-delà du retour au travail, entre autre au niveau fonctionnel, de la gestion de la douleur, la détresse psychologique et la satisfaction face aux divers aspects de sa vie affectée par sa condition physique. Malgré l'aspect multidimensionnel de l'adaptation d'individus souffrant de douleurs et d'incapacité suite à une lésion musculo-squelettique, peu d'études prospectives se sont penchées sur les déterminants touchant la qualité de la vie, la détresse psychologique et la rechute. Ceci nous apparaît comme une lacune majeure dans ce domaine d'étude à corriger si nous désirons mieux comprendre l'adaptation de travailleurs accidentés souffrant de TMS dans une perspective biopsychosociale. De plus, le fait que divers facteurs de risque soient associés à différentes variables de résultat souligne l'importance de tenir compte de tous ces facteurs, leurs interactions, mais aussi de plusieurs indicateurs d'adaptation. L'évolution de l'impact des facteurs pronostiques avec le passage du temps suggère qu'il serait pertinent de considérer plusieurs temps de mesure afin de tenir compte également de l'évolution de ces facteurs. Il serait sans doute pertinent de songer à utiliser certaines méthodes statistiques permettant de modéliser de manière plus claire les relations et interactions complexes entre les divers facteurs de risque de chronicité, de même que leur évolution temporelle.

Il y a un manque important de modèles conceptuels dépeignant l'évolution de la douleur et l'incapacité d'une phase aiguë à une phase chronique. Gatchel (1991) par exemple a proposé un modèle décrivant les étapes d'un processus de déconditionnement physique et psychologique pouvant mener à l'adoption du rôle de malade et le développement de comportements de douleur plus rigides contribuant au développement de la douleur et l'incapacité chronique (124). D'autres auteurs ont aussi proposé certains modèles reflétant l'interaction dynamique et complexe entre plusieurs facteurs biologiques, psychologiques et sociaux augmentant les risques de chronicité (169, 174, 175, 176). Ces modèles n'ont toutefois pas été testés et validés empiriquement.

Par ailleurs, une constatation importante de notre recension des écrits est le peu d'études qui ont porté sur des sujets en phase chronique. En fait, près de la moitié des études recensées se sont attardées à des sujets en phase aiguë et subaiguë, ce qui témoigne de l'intérêt porté à la prévention par l'identification des facteurs de risque. La majorité des autres études ont portées sur des populations mixtes sans tenir compte de la durée des symptômes. Les sujets souffrant de douleur et d'incapacité chroniques ont donc été négligés jusqu'à ce jour au niveau des études prospectives. Pourtant, il est généralement reconnu que plus la douleur et l'incapacité perdurent, moins un individu a de chance de se rétablir (80). Par ailleurs, des interventions multidisciplinaires auprès de sujets en phase de chronicité excédant 18 à 24 mois ont démontré des résultats intéressants sur plusieurs indicateurs d'adaptation (86, 87, 88, 177). Il demeure que certains sujets aux prises avec des douleurs chroniques ne se rétablissent pas. Il y a donc un besoin important d'études prospectives multivariées auprès de ces sujets déjà en phase chronique afin de mieux comprendre les facteurs contribuant à la persistance de leurs incapacités.

Enfin, la motivation à s'engager dans un processus de changement n'a pas été identifiée comme une variable déterminante du processus de retour au travail. Comme l'approche motivationnelle a maintes fois démontré qu'elle pouvait avoir un impact significatif sur l'adhésion au traitement et le développement de comportements plus adaptés (178, 179), il est surprenant que la motivation au changement ne soit pas une variable significative auprès de travailleurs accidentés à risque de chronicité et ayant besoin de services de réadaptation professionnelle et sociale. Cliniquement, il semble évident que la motivation à changer sera garante des efforts qui seront déployés à cette fin. Au niveau de la recherche, certains ont toutefois rapporté des difficultés dans la validation du modèle des stades de changement de Prochaska et ce, malgré les diverses méthodologies utilisées en recherche (180). Dans cette étude, nous avons choisi une voie qui semblait prometteuse en calculant un score global de motivation. Il est fort probable que l'instrument utilisé dans cette étude était trop générique et qu'il aurait été préférable d'utiliser un instrument plus adapté à certains comportements plus spécifiques. Malgré le fait que le rôle de la motivation au changement n'ait pas été validé dans cette étude, l'Entrevue Motivationnelle qui a toutefois été développée en parallèle avec le modèle transthéorique de Prochaska (181), a démontré son efficacité à changer des comportements inadaptés et à développer des comportements adaptés en vue d'une bonne hygiène de santé (178, 179). Il importe de poursuivre la recherche sur le concept de motivation au changement avec une population en incapacité chronique et démontrant des difficultés de réinsertion professionnelle. D'autant plus que la motivation est un trait sur lequel il est possible d'influer en particulier par les interactions avec le conseiller en réadaptation de même que tous les agents impliqués au dossier (182, 183) au cours du processus de retour au travail.

Conclusion

Cette recherche doctorale a permis d'apporter un nouvel éclairement sur un domaine de recherche en plein essor, d'une part en faisant une vaste synthèse des résultats de recherche les plus pertinents dans ce domaine, puis en validant certains facteurs de risque affectant plus spécifiquement le processus de retour au travail. La recension systématique des écrits a permis de constater que peu de variables considérées comme des facteurs de risque importants semblent être des indices fiables de l'adaptation suite une lésion musculo-squelettique. Certains facteurs sur lesquels il est possible d'intervenir ont toutefois été identifié comme des variables pronostiques significatives, soit la durée des symptômes, la comorbidité, les attentes de rétablissement, les stratégies d'adaptation, la somatisation, de même que certaines procédures de gestion intégrée des incapacités. L'article empirique quant à lui, a permis d'identifier l'âge, le genre, les attentes de rétablissement en terme de retour au travail, le soutien perçu en milieu de travail ainsi que le processus de consolidation médicale comme variables déterminantes de l'engagement dans un processus de retour au travail. Cette étude a également permis d'identifier deux variables prometteuses largement ignorées par ce champ d'études, soit les symptômes post-traumatiques et l'importance accordée au travail. En identifiant des facteurs biologiques, psychologiques et environnementaux, ces deux études apportent donc un appui supplémentaire à l'importance d'adopter une perspective biopsychosociale afin de mieux comprendre les facteurs de risque de chronicité. Force est de constater toutefois que les facteurs psychosociaux semblent jouer un rôle prédominant dans l'adaptation à un trouble musculo-squelettique. Par ailleurs, peu de différences émergent entre les phases de chronicité quant aux facteurs pronostiques significatifs et les facteurs psychosociaux semblent jouer un rôle important dès les phases aiguë et subaiguë. Ainsi, les résultats de ces deux études auront permis de faire avancer de quelques pas les connaissances concernant le processus d'adaptation de sujets souffrant de TMS.

Références (introduction et conclusion)

1. Chopra, A., & Abdel-Nasser, A. (2008). Epidemiology of rheumatic musculoskeletal disorders in the developing world. *Best Practices & Research Clinical Rheumatology*, *22*(4), 583-604.

2. Punnett L., & Wegman D. H. (2004). Work-related musculoskeletal disorders: The epidemiologic evidence and the debate. *Journal of Electromyography and Kinesiology*, *14*, 13-23.

3. Wright, A. R., & Gatchel, R. J. (2002). Occupational musculoskeletal pain and disability. In D. C. Turk & R. J. Gatchel (eds), *Psychological approaches to pain management: A practitioner's handbook* (349-364). New York: Guilford Press.

4. Waddell, G. (2006). Preventing incapacity in people with musculoskeletal disorders. *British Medical Bulletin*, *77-78*, 55-69.

5. Rosenman, K. D., Gardiner, J. C., Wang, J., Biddle, J., Hogan, A., Reilly, M. J., Roberts, K., & Welch, E. (2000). Why most workers with occupational repetitive trauma do not file for worker's compensation. *Journal of Occupational and Environmental Medicine*, *42*, 25-34.

6. Leroux, I., Dionne, C. E., Bourbonnais, R., & Brisson, C. (2005). Prevalence of musculoskeletal pain and associated factors in the Quebec working population. *International Archives of Occupational and Environmental Health*, *78*, 379-386.

7. Baril, R., Berthelette, D., & Massicotte, P. (2003). Early return to work of injured workers: Multidimensional patterns of individual and organizational factors. *Safety Science*, *41*, 277-300.

8. Commission de la Santé et Sécurité du Travail (2003a). *Statistiques sur les lésions en "ites" du système musculo-squelettique : 1999-2002*. Montreal: CSST.

9. Commission de la Santé et Sécurité du Travail (2003b). *Statistiques sur les affections vertébrales : 1999-2002*. Montreal: CSST.

10. National Research Council (2001). Introduction. In National Research Council (Eds), *Musculoskeletal disorders and the workplace: Low back and upper extremities* (85-115). Washington, DC: National Academy Press.

11. Godin, J. F., Baril, R., & Massicotte, P. (2005). *Portrait statistique des travailleurs en réadaptation pour 2001-2002*. Montréal: IRSST.

12. Spitzer, W. O., Leblanc, F. E., & Dupuis, M. (1987). Scientific approach to the assessment and management of activity-related spinal disorders: A monograph for clinicians. Report of the Quebec task force on spinal disorders. *Spine*, *75*(suppl.), 3-59.

13. Frank, J. W., Brooker, A. -S., DeMaio, S. E., Kerr, M. S., Maetzel, A., Shannon, H. S., Sullivan, T. J., Norman, R. W., & Wells, R. P. (1996). Disability resulting from occupational low back pain. Part II: What do we know about secondary prevention? A review of the scientific evidence on prevention after disability begins. *Spine*, *21*, 2918-2929.

14. Hashemi, L., Webster, B. S., Clancy, E. A., & Volinn, E. (1997). Length of disability and cost of workers' compensation low back pain claims. *Journal of Occupational and Environmental Medicine*, *39*(10), 937-945.

15. Hashemi, L., Webster, B. S., Clancy, E. A., & Courtney, T. K. (1998). Length of disability and cost of work-related musculoskeletal disorders of the upper extremity. *Journal of Occupational and Environmental Medicine*, *40*(3), 261-269.

16. Reid, S., Haugh L. D., Hazard R. G., & Tripathi, M. (1997). Occupational low back pain: Recovery curves and factors associated with disability. *Journal of Occupational Rehabilitation*, *7*(1), 1-14.

17. Gatchel, R. J., Polatin, P. B., & Mayer, T. G. (1995). The dominant role of psychosocial risk factors in the development of chronic low back pain disability. *Spine, 20*, 2702-2709.

18. Gatchel, R. J., Adams, L., Polatin, P. B., & Kishino, N. D. (2002). Secondary loss and pain-associated disability: Theoritical overview and treatment implications. *Journal of Occupational Rehabilitation*, *12*, 99-110.

19. Harris, S., Morley, S., & Barton, S. B. (2003). Role loss and emotional adjustment in chronic pain. *Pain*, *105*, 363-370.

20. Walker, J., Beatrice, S., & Holloway, I. (2006). The experience of chronic pain: Accounts of loss in those seeking healp from pain clinics. *European Journal of Pain*, *10*, 199-207.

21. Liddle, J., Carlson, G., & McKenna, K. (2004). Using a matrix in life transition research. *Qualitative Health Research*, *14*(10), 1396-1417.

22. McKee-Ryan, F. M., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005). Psychological and physical well-being during unemployment: A meta-analytic study. *Journal of Applied Psychology*, *90*, 53–76.

23. Ranjan, R. (2004). Job loss and chronic illness: A situation of double jeopardy. In R. Roy (Ed.), *Chronic pain, loss and suffering* (pp. 43-61). Toronto: University of Toronto Press.

24. Polatin, P. B., Gatchel, R. J., Barnes, D., Mayer, H., Arens, C., & Mayer, T. G. (1989). A psychosociomedical prediction model of response to treatment by chronically disabled workers with lower back pain. *Spine*, *14*, 956-961.

25. Franche, R. L., Cullen, K., Clarke, J., Irvin, E., Sinclair, S., Frank, J., & IWH. (2005). Workplace-based return-to-work interventions: A systematic review of the quantitative literature. *Journal of Occupational Rehabilitation*, *15*(4), 607-631.

26. Krause, N., Dasinger, L.K. & Neuhauser, F. (1998). Modified work and return to work: A review of the literature. *Journal of Occupational Rehabilitation*, *8*(2), 113-139.

27. William, R. M., Wetmorland, M., Schmuck, G., & Creen, M. (2006). A systematic review of workplace rehabilitation interventions for work-related low back pain. *International Journal of Disability Management Research*, *1*(1), 21-30.

28. Nordenmark, M., & Strandh, M. (1999). Towards a sociological understanding of mental well-being among the employed: The role of economic and psychosocial factors. *Sociology*, *33*(3), 577-597.

29. Blustein, D. L. (2008). The role of work in psychological health and well-being: A conceptual, historical, and public policy perspective. *American Psychologist*, *63*(4), 228-240.

30. Clavier, D. (1994). Perte d'emploi et traumatisme. *Carriérologie*, *5*(4), 149-164.

31. Schlossberg, N. K. (1984). *Counseling adults in transition*. New York, NY: Springer Publishing Company, Inc.

32. Schlossberg, N. K., Water, E. B., & Goodman, J. (1995). *Counseling adults in transition: Linking practice with theory* (2nd ed.). New York, NY: Springer Publishing Company, Inc.

33. Livneh, H. (2001). Psychosocial adaptation to chronic illness and disability: A conceptual framework. *Rehabilitation Counseling Bulletin*, *44*(3), 151-160.

34. Schultz, I. Z., Stowell, A. W., Feuerstein, M., & Gatchel, R. J. (2007). Models of return to work for musculoskeletal disorders. *Journal of Occupational Rehabilitation*, *17*, 327-352.

35. Turk, D. C., & Monarch, E. S. (2002). Biopsychosocial perspective on chronic pain. In D. C. Turk & R. J. Gatchel, (Ed.), *Psychological approaches to pain management: A practitioner's handbook* (2nd ed.) (pp. 3-29). New York, NY: Guilford Press.

36. Gatchel, R. J., Pang, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychological Bulletin*, *133*(4), 581-624.

37. Turk, D. C. (1996). Biopsychosocial perspective on chronic pain. In D. C. Turk & R. J. Gatchel (Eds), *Psychological approaches to pain management: A practitioner's handbook* (pp. 3-32). New York, NY: Guilford Press.

38. Krause, N., Dasinger, L. K., Deegan, L. J., Rudolph, L., & Brand, R. J. (2001a). Psychosocial job factors and return to work after compensated low back injury: A disability phase-specific analysis. *American Journal of Industrial Medicine*, *40*, 374-392.

39. Linton, S. J. (2000). A review of psychological risk factors in back and neck pain. *Spine*, *25*(9), 1148-1156.

40. Truchon, M., & Fillion, L. (2000). Biopsychosocial determinants of chronic disability and low-back pain: A review. *Journal of Occupational Rehabilitation*, *10*(2), 117.

41. Heitz, C. A. M., Hilfiker, R., Bachmann, H. J., Lorenz, T., Uebelhart, D., Klipstein, A., & Brunner, F. (2009). Comparison of risk factors predicting return to work between patients with subacute and chronic non-specific low back pain: Systematic review. *European Spine Journal*, *18*, 1829-1835.

42. Gatchel, R. J., & Oordt, M. S. (2003). Acute and chronic pain conditions. In R. J. Gatchel & M. S. Oordt (Eds). *Clinical health and psychology and primary care* (pp. 117-134). Washington, DC: APA.

43. Nielson, W. R. & Mior, S. (2001). Prevention of chronic pain: The unexplored frontier. *Clinical Journal of Pain*, *17*(4), S68-S69.

44. Cedrashi, C., Robert, J., Goerg, D., Perrin, E., Fisher, W., & Vischer, T. L. (1999). Is chronic non-specific low back pain chronic? Definitions of a problem and problems of a definition. *British Journal of General Practice*, *49*(442), 358-362.

45. Borghouts, J. A. J., Koes, B. W., & Bouter, L. M. (1998). The clinical course and prognostic factors of non-specific neck pain: A systematic review. *Pain*, *77*, 1-13.

46. Crook, J., Milner, R., Schultz, I. Z., & Stringer, B. (2002). Determinants of occupational disability following a low back injury: A critical review of the literature. *Journal of Occupational Rehabilitation*, *12*(4), 277-295.

47. Hartvigsen, J., Lings, S., Leboeuf-Yde, C., & Bakketeig, L. (2004). Psychosocial factors at work in relation to low back pain and consequences of low back pain: A systematic, critical review of prospective cohort studies. *Occupational and Environmental Medicine*, *61*(1), e2.

48. Iles, R. A., Davidson, M., & Taylor, N. F. (2008). Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: A systematic review. *Occupational and Environmental Medicine*, *65*, 507-517.

49. Kent, P. M., & Keating, J. L. (2008). Can we predict poor recovery from recent-onset non-specific low back pain? A systematic review. *Annual Therapy*, *13*, 12-28.

50. Kuijer, W., Groothoff, J. W., Brouwer, S., Geertzen, J. H. B., & Dijkstra, P.U. (2006). Prediction of sickness absence in patients with chronic low back pain: A systematic review. *Journal of Occupational Rehabilitation*, *16*, 439-467.

51. Kuijpers, T., Van der Windt, D. A. W. M., Van der Heijden, G. J. M. G., & Bouter, L. M. (2004). Systematic review of prognostic cohort studies on shoulder disorders. *Pain*, *109*(3), 420-431.

52. Linton, S. J. (2001). Occupational psychological factors increase the risk for back pain: A systematic review. *Journal of Occupational Rehabilitation*, *11*(1), 53-66.

53. Mallen, C., Peat, G., Thomas, E., Dunn, K. M., & Croft, P. (2007). Prognostic factors for musculoskeletal pain in primary care: A systematic review. *British Journal of General Practice*, *57*, 655-661

54. McIntosh, G., Frank, J., Hogg-Johnson, S., Hamilton, H., & Bombardier, C. (2000). Low back pain prognosis: Structured review of the literature. *Journal of Occupational Rehabilitation*, *10*(2), 101-115.

55. Pengel, L. H. M., Herbert, R. D., Maher, C. G., & Refshauge, K. M. (2003). Acute low back pain: A systematic review of its prognosis. *British Medical Journal*, *327*(7410), 323-325.

56. Pincus, T., Burton, A. K., Vogel, S., & Field, A. P. (2002). A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, *27*(5), E109-E120.

57. Selander, J., Marnetoft, S. U., Bergroth, A., & Ekholm, J. (2002). Return to work following vocational rehabilitation or neck, back and shoulder problems: Risk factors reviewed. *Disability and Rehabilitation*, *24*(14), 704-712.

58. Shaw, W. S., Pransky, G., & Fitzgerald, T. E. (2001). Early prognosis for low back disability: Intervention strategies for health care providers. *Disability and Rehabilitation*, *23*(18), 815-828.

59. Steenstra, I. A., Verbeek, J. H., Heymans, M. W., & Bongers, P. M. (2005). Progniostic factors for duration of sick leave in patients sick listed with acute low back pain: A systematic review of the literature. *Occupational and Environmental Medicine*, *62*, 851-860.

60. Turner J. A., Franklin G., & Turk, D. C. (2000). Predictors of chronic disability in injured workers: A systematic literature synthesis. *American Journal of Industrial Medicine*, *38*, 707-722.

61. Altman, D. G. (2001). Systematic reviews of evaluations of prognosis variables. *British Medical Journal*, *323*, 224-228.

62. Krause, N., Frank, J. W., Dasinger, L. K., Sullivan, T. J. & Sinclair, S. J. (2001b). Determinants of duration of disability and return to work after work-related injury and illness: Challenges for future research. *American Journal of Industrial Medicine*, *40*, 464-484.

63. Suls, J., & Rothman, A. (2004). Evolution of the biopsychosocial model: Prospects and challenges for health psychology. *Health Psychology*, *23*(2), 119-125.

64. Mallen, C., Peat, G., & Croft, P. (2006). Quality assessment of observational studies is not common place in systematic reviews. *Journal of Clinical Epidemiology*, *59*, 765-769.

65. Lecomte, C., & Savard, R. (2006). *Les effets d'une intervention de counseling sur la réadaptation de travailleurs accidentés à risque de chronicité*. Retreived from http://www.irsst.qc.ca/media/documents/PubIRSST/RR-448.pdf.

66. World Health Organization (1998). Bone and joint decade 2000-2010. *ACTA Orthopaedics Scandinavia*, *69*, 219-220.

67. Carnes, D., Parsons, S., Ashby, D., Breen, A., Foster, N. E., Pincus, T., Vogel, S., & Underwood, M. (2007). Chronic musculoskeletal pain rarely presents in a single body site: Results from a UK population study. *Rheumatology*, *46*, 1168-1170.

68. Ijzelenberg, W., & Burdoff, A. (2004). Impact of musculoskeletal co-morbidity of neck and upper extremities on health care utilisation and sickness absence for low back pain. *Occupational and Environmental Medicine*, *61*, 806-810.

69. Kamaleri, Y., Natvig, B., Ihlebaek, C. M., & Bruusgaard, D. (2008). Localized or widespread musculoskeletal pain: Does it matter? *Pain*, *138*, 41-46.

70. Mayer, T. G., Towns, B. L., Nelett, R., Theodore, B. R., & Gatchel, R. J. (2008). Chronic widespread pain in patients with occupational spinal disorders. Prevalence, psychiatric comorbidity and association with outcome. *Spine*, *33*(17), 1889-1897.

71. Natvig, B., Bruusgaard, D., & Eriksen, W. (2001). Localized low back pain and low back pain as part of widespread musculoskeletal pain: Two different disorders? A cross-sectional population study. *Journal of Rehabilitation Medicine*, *33*, 21-25.

72. Hestbaek, L., Leboeuf-Yde, C., & Manniche, C. (2003b). Is low back pain part of a general health pattern or is it a separate and distinctive entity? A critical literature review of comorbidity with low back pain. *Journal of Manipulative and Physiological Therapeutics*, *26*(4), 243-252.

73. Schneider, S., Mohnen, S. M., Schiltenwolf, M., & Rau, C. (2007). Comorbidity of low back pain: Representative outcomes of a national health study in the federal republic of Germany. *European Journal of Pain*, *11*, 387-397.

74. Von Korff, M., Crane, P., Lane, M., Miglioretti, D. L., Simon, G., Saunders, K., Stang, P., Brandenburg, N., & Kessler, R. (2005). Chronic spinal pain and physical-mental comorbidity in the United States: Results from the national comorbidity survey replication. *Pain*, *113*, 331-339.

75. Bot, S. D. M., van der Waal, J. M., Terwee, C. B., van der Windt, D. A. W. M., Bouter, L. M., & Dekker, J. (2005a). Course and prognosis of elbow complaints: A cohort study in general practice. *Annals of the Rheumatic Diseases*, *64*, 1331-1336.

76. Bot, S. D. M., van der Waal, J. M., Terwee, C. B., van der Windt, D. A. W. M., Scholten, R. J. P. M, Bouter, L. M., & Dekker, J. (2005b). Predictors of outcome in neck and shoulder symptoms. A cohort study in general practice. *Spine, 30*(16), E459-E470

77. Siebens, H. C. (2007). Musculoskeletal problems as comorbidities. *American Journal of Physical Medicine and Rehabilitation*, *86*(suppl.), s69-s78.

78. Hestbaek, L., Leboeuf-Yde, C., & Manniche, C. (2003). Low back pain: What is the long-term course? A review of studies of general patient populations. *European Spine Journal*, *12*, 149-165.

79. Van Tulder, M., Koes, B., & Bombardier, C. (2002). Low back pain. *Best Practice & Research Clinical Rheumatology*, *16*, 761-775.

80. Wright, A. R., & Gatchel, R. J. (2002). Occupational musculoskeletal pain and disability. In D. C. Turk & R. J. Gatchel (Eds). *Psychological approaches to pain management: A practitioner's handbook* (pp. 349-364). New York: Guilford Press.

81. Krause, N., & Ragland, D. R. (1994). Occupational disability due to low back pain: A new interdisciplinary classification based on a phase model of disability. *Spine*, *19*(9), 1011-1020.

82. Waddell, G., & Burton, A.K. (2001). Occupational health guidelines for the management of low back pain at work: Evidence review. *Occupational Medicine*, *51*, 124-135.

83. Burton, A. K., Kendall, N. A. S., Pearce, B. G., Birrell, L. N., & Bainbridge, L. C. (2009). Management of work-relevant upper limb disorders: A review. *Occupational Medicine*, *59*, 44-52.

84. Gatchel, R. J., & Okifuji, A. (2006). Evidence-based scientific data documenting the treatment and cost-effectiveness of comprehensive pain programs for chronic non-malignant pain. *Journal of Pain*, *7*, 779-793.

85. Murphy, D. R., & Rosemblum, A. (2006). Return to work after two years of total disability: A case report. *Journal of Occupational Rehabilitation*, *16*, 253-260.

86. Jordan, K., Mayer, T., & Gatchel, R. J. (1998). Should extended disability be an exclusion criterion for tertiary rehabilitation? Socioeconomic outcomes of early versus late functional restauration in compensation spinal disorders. *Spine*, *23*(19), 2110-2116.

87. Gatchel, R. J. & Mayer, T. G. (2008). Evidence-informed management of chronic low back pain with functional restoration. *The Spine Journal*, *8*, 65-69.

88. Proctor, T. J., Mayer, T. G., Gatchel, R. J., & McGeary, D. D. (2004). Unremitting health-care-utilization outcomes of tertiary rehabilitation of patients with chronic musculoskeletal disorders. *The Journal of Bone and Joint Surgery*, *86*, 62-69.

89. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological review*, *84*, 191-215.

90. Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman and Company.

91. Lau-Walker, M. (2006). A conceptual care model for individualized care approach in cardiac rehabilitation – combining both illness representation and self-efficacy. *British Journal of Health Psychology*, *11*, 103-117.

92. Janzen, J.A., Silvius, J., Jacobs, S., Slaughter, S., Dalziel, W., & Drummond, N. (2006). What is a health expectation? Developing a pragmatic conceptual model from a psychological theory. *Health Expectations*, *9*, 37-48.

93. Mitchell, L. K., Brodwin, M. G., & Benoit, R. B. (1990). Strengthening the worker's compensation system by increasing client efficacy. *Journal of Applied Rehabilitation Counseling*, *21*, 22-26.

94. Feltz, D. L., & Payment, C.A. (2005). Self-efficacy belief related to movement and mobility. *Quest*, *57*, 24-36.

95. Keefe, F. J., Rumble, M. E., Scipio, C. D., Giordano, L. A. & Perri, L. M. (2004). Psychological aspects of persistent pain: Current state of the science. *The Journal of Pain*, *5*(4), 195-211.

96. Altmaier, E. M., Russell, D. W., Kao, C. F., Lehmann, T. R., & Weinstein, J.N. (1993). Role of self-efficacy in rehabilitation outcome among chronic low back pain patients. *Journal of Counselling Psychology*, *40*(3), 335-339.

97. Marks, R., Allegrante, J. P., & Lorig, K. (2005a). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part I). *Health Promotion Practice*, *6*(2), 37-43.

98. Marks, R., Allegrante, J. P., & Lorig, K. (2005b). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implication for health education practice (part II). *Health Promotion Practice*, *6*(2), 148-156.

99. Smarr, K. L., Parker, J. C., Wright, G. E., Stucky-Ropp, R. C., Buckelew, S. P., Hoffman, R. W., O'Sullivan, F. X., & Hewett, J. E. (1997). The importance of enhancing self-efficacy in rheumatoid arthritis. *Arthritis Care and Research*, *10*(1), 18-26.

100. Sowden, M., Hatch, A., Gray, S.E., & Coombs, J. (2006). Can four psychological risk factors for chronic pain and disability (yellow flags) be modified by a pain management programme? A pilot study. *Physiotherapy*, *92*, 43-49.

101. Waldrop, D., Lightsey, O. R., Ethington, C. A., Woemmel, C. A. & Coke, A. L. (2001). Self-efficacy, optimism, health competence and recovery from orthopaedic surgery. *Journal of Counseling Psychology*, *48*(2), 233-238.

102. Gallagher, R., Donoghue, J., Chenoweth, L., & Stein-Parbury, J. (2008). Self-management in older patients with chronic illness. *International Journal of Nursing Practice*, *14*, 373-382.

103. Lazarus, R. S. (1999). *Stress and emotions: A new synthesis*. New York, NY: Springer Publishing company, Inc.

104. Ptacek, J. T., & Pierce, G. R. (2003). Issues in the study of stress and coping in rehabilitation setting. *Rehabilitation Psychology*, *48*(2), 113-124.

105. Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York, NY: Springer Publishing company, Inc.

106. Brown, G. K., & Nicassio, P. M. (1987). Development of a questionnaire for the assessment of active and passive coping strategies in chronic pain patients. *Pain*, *31*, 53-64.

107. Endler, N. S., & Parker, J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology*, *59*, 844-854.

108. Folkman, S., Lazarus, R. S., Gruen, R. J., & DeLongis, A. (1986). Appraisal, coping, health status and psychological symptoms. *Journal of Personality and Social Psychology*, *50*(3), 571-579.

109. Endler, N. S., Corace, K. M., Summerfeldt, L. J., Johnson, J. M., & Rothbart, P. (2003). Coping with chronic pain. *Personality and Individual Differences*, *34*, 323-346.

110. Lightsey, O. R., Wells, A. W., Wang, M. C., Pietruszka, T., Ciftci, A & Stancil, B. (2009). Avoidance coping, and fear of pain as mediators of the relationship between positive affect, negative affect, and pain-related distress among African American and Caucasian college women. *The Counseling Psychologist*, *37*(1), 116-146.

111. Ramjeet, J., Smith, J., & Adams, M. (2008). The relationship between coping and psychological and physical adjustment in rheumatoid arthritis: A literature review. *Journal of Clinical Nursing 17*, 418–428.

112. Dennison, L., Moss-Morris, R., & Chalder, T. (2009). A review of psychological correlates of adjustment in patients with multiple sclerosis. *Clinical Psychology Review*, *29*, 141–153.

113. Horgan, O., & MacLachlan, M. (2004). Psychosocial adjustment to lower-limb amputation: A review. *Disability and Rehabilitation*, *26*(14/15), 837-850.

114. Donnellan, C., Hevey, D., Hickey, A., & O'Neill, D. (2006). Defining and quantifying coping strategies after stroke: A review. *Journal of Neurology, Neurosurgery, and Psychiatry*, *77*, 1208–1218.

115. Roesch, S. C., Adams, L., Hines, A., Palmores, A., Vyas, P., Tran, C., Pekin, S., & Vaughn, A. A. (2005). Coping with prostate cancer: A meta-analytic review. *Journal of Behavioral Medicine*, *28*(3), 281-293.

116. Nielson, M. S. (2003). Crisis support and coping as mediators of well-being in persons with spinal cord lesion. *Journal of Clinical Psychology in Medical Settings*, *10*, 91-99.

117. Turk, D. C., & Monarch, E.S. (2002). Biopsychosocial perspective on chronic pain. In D.C. Turk & R.J. Gatchel, (Eds.), *Psychological approaches to pain management: A practitioner's handbook* (2nd Ed.) (pp. 3-29). New York, NY: Guilford Press.

118. Stanton, A. L., Revenson, T. A., & Tennen, H. (2007). Health psychology: Psychological adjustment to chronic disease. *Annual Review of Psychology*, *58*, 565-592.

119. Carver, C. S., & Scheier, M. F. (2002) Optimism. In C.R. Snyder & S.J. Lopez (Eds.), *Handbook of positive psychology* (pp.231-243). Oxford, England: Oxford University press.

120. De Gucht, V., & Fischler, B. (2002). Somatization: A critical review of conceptual and methodological issues. *Psychosomatics*, *43*, 1-9.

121. Ursin, H. (1997). Sensitization, somatization and subjective health complaints. *International Journal of Behavioural Medicine*, *4*, 105-116.

122. Sharpe, M., & Carson, A. (2001). "Unexplained" somatic symptoms, functional syndromes and somatization: Do we need a paradigm shift? *Annals of Internal Medicine*, *134*, 926-930.

123. Duddu, V., Isaac, M. K., & Chaturvedi, S. K. (2006). Somatization, somatosensory amplification, attribution styles and illness behaviour: A review. *International Review of Psychiatry*, *18*, 25-33.

124. Gatchel, R. J., & Dersh, J. (2002). Psychological disorders and chronic pain: Are there cause-and-effect relationships? In D. C. Turk & R. J. Gatchel (Eds), *Psychological approaches to pain management: A practitioner's handbook* (pp.30-51). New York, NY: Guilford Press.

125. Barsky, A. J., Ettner, S. L., Horsky, J., & Bates, D. W. (2001). Resource utilization of patients with hypochondriacal health anxiety and somatization. *Medical Care*, *39*(7), 705-715.

126. Epstein, R. M., Quill, T. E., & Whinney, I. R. (1999). Somatization reconsidered: Incorporating the patient's experience of illness. *Archives of Internal Medicine*, *159*, 215-222.

127. Palmer, K. T., Calnan, M., Wainwright, D., Poole, J., O'Neill, C., Winterbottom, A., Watkins C., & Coggon, D. (2005). Disabling musculoskeletal pain and its relation to somatization: A community-based postal survey. *Occupational Medicine*, *55*, 612-617.

128. Dworkin, S. F. (1991). Illness behaviour and dysfunction: Review of concepts and application to chronic pain. *Canadian Journal of Physiology and Pharmacology*, *69*, 662-671.

129. Rief, W., Ihle, D., & Pilger, F. (2003). A new approach to assess illness behaviour. *Journal of Psychosomatic Research*, *54*, 405-414.

130. Chaturvedi, S. K., Desai, G., & Shaligram, D. (2006). Somatoform disorders, somatization and abnormal illness behaviour. *International Review of Psychiatry*, *18*, 75-80.

131. Main, C. J., & Waddell, G. (1998). Behavioral responses to examination: A reappraisal of the interpretation of "nonorganic signs". *Spine*, *23*(21), 2367-2371.

132. Waddell, G. (2004) *The back pain revolution* (2nd ed.). United Kingdom: Churchill Livingstone.

133. Butler, C. C., Evans, M., Greaves, D., & Simpson, S. (2004). Medically unexplained symptoms: The biopsychosocial model left wanting. *Journal of the Royal Society of Medicine*, *97*, 219-222.

134. Rantakeisu, U., & Jönsson, L. R. (2003). Unemployment and mental health among white-collar workers - a question of work involvement and financial situation? *International Journal of Social Welfare*, *12*, 31-41.

135. Shamir, B. (1986). Protestant work ethic, work involvement and the psychological impact of employment. *Journal of Occupational Behaviour*, *7*, 25-38.

136. Corbière, M., Bonneville-Roussy, A., Franche, R.-L., Coutu, M. F., Choinière, M., Durand, M. J., & Boulanger, A. (in press). Further validation of the BDI-II among people with chronic pain originating from musculoskeletal disorders. *Clinical Journal of Pain*.

137. Strauser, D. R., Lustig, D. C., Cogdal, P. A., & Uruk, A. C. (2006). Trauma symptoms: Relationship with career thoughts, vocational identity and developmental work personality. *The Career Development Quaterly*, *54*, 346-360.

138. Asmundson, G. J. G., Bonin, M. F., Frombach, I. K., & Norton, G. R. (2000). Evidence of a disposition toward fearfulness and vulnerability to posttraumatic stress in dysfunctional pain patients. *Behaviour Research and Therapy*, *38*, 801-812.

139. Otis, J. D., Keane, T. M., & Kerns, R. D. (2003). An examination of the relationship between chronic and post-traumatic stress disorder. *Journal of Rehabilitation Research and Development*, *40*(5), 397-406

140. Vranceanu, A. M., Safren, S., Zhao M., Cowan J., & Ring, D. (2008). Disability and psychologic distress in patients with non-specific and specific arm pain. *Clinical Orthopaedics and Related Research*, *466*, 2820-2826.

141. Asmundson, G. J. G., Norton, G. R., Allerding, M. D., Norton, P. J., & Larsen, D. K. (1998). Posttraumatic stress disorder and work-related injury. *Journal of Anxiety Disorders*, *12*(10), 57-69.

142. Geisser, M. E., Roth, R. S., Bachman, J. E., & Ekert, T. A. (1996). The relationship between symptoms of posttraumatic stress disorder and pain, affective disturbance and disability among patients with accident and non-accident related pain. *Pain*, *66*, 207-214.

143. Sharpe, T. J., & Harvey, A. G. (2001). Chronic pain and posttrautic stress disorder: Mutual maintenance? *Clinical Psychology Review*, *6*, 857-877.

144. Roth, R. S., Geisser, M. E., & Bates, R. (2008). The relation of post-traumatic stress symptoms to depression and pain in patients with accident-related chronic pain. *The Journal of Pain*, *9*(7), 588-596.

145. Habeck, R. V., Hunt, H. A., & VanTol, B. (1998). Workplace factors associated with preventing and managing disability. *Rehabilitation Counseling Bulletin*, *42*(2), 98-143.

146. William, R. M., & Wetmorland, M. (2002). Perspectives on workplace disability management: A review of the literature. *Work*, *19*, 87-93.

147. Krause, N., Dasinger, L. K., & Neuhauser, F. (1998). Modified work and return to work: A review of the literature. *Journal of Occupational Rehabilitation*, *8*(2), 113-139.

148. Franche, R. L., Cullen, K., Clarke, J., Irvin, E., Sinclair, S., Frank, J., & IWH. (2005). Workplace-based return-to-work interventions: A systematic review of the quantitative literature. *Journal of Occupational Rehabilitation*, *15*(4), 607-631.

149. William, R. M., Wetmorland, M., Schmuck, G., & Creen, M. (2006). A systematic review of workplace rehabilitation interventions for work-related low back pain. *International Journal of Disability Management Research*, *1*(1), 21-30.

150. Schultz, I. Z., Crook, J., & Winter, A. (2005). Evidence-informed best practices for injured workers at risk for disability at the subacute stage. In I. Z. Schultz & R. J. Gatchel (Eds.), *Handbook of complex occupational disability claims: Early risk identification, intervention and prevention* (pp. 443-460). New York, NY: Springer.

151. Brooker, A. S., Cole, D. C., Hogg-Jonhson, S., Smith, J., & Frank, J. W. (2001). Modified work: Prevalence and characteristics in a sample of workers with soft-tissue injuries. *Journal of Occupational and Environmental Medicine*, *43*, 276-284.

152. Baril, R., Berthelette, D., & Massicotte, P. (2003). Early return to work of injured workers: Multidimensional patterns of individual and organizational factors. *Safety Science*, *41*, 277-300.

153. Van Duijn, M., & Burdof, A. (2008). Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. *Journal of Rehabilitation Medicine*, *40*, 576-581.

154. Blustein, D. L. (2008). The role of work in psychological health and well-being: A conceptual, historical, and public policy perspective. *American Psychologist*, *63*(4), 228-240.

155. Nordenmark, M., & Strandh, M. (1999). Towards a sociological understanding of mental well-being among the employed: The role of economic and psychosocial factors. *Sociology*, *33*(3), 577-597.

156. Arsenault, P., & Marchand, S. (2007). Synthèse des mécanismes impliqués dans un syndrome douloureux complexe : La fibromyalgie. *Douleur et Analgésie*, *20*, 200-212.

157. Rief, W. & Barsky, A. J. (2005). Psychobiological perspectives on somatoform disorders. *Psychoneuroendocrinology*, *30*, 996-1002.

158. Bowlby, J. (1982). *Attachment and loss, vol 1 : Attachment* (2nd Ed.). New York, NY: Basic Books.

159. Young, J. E. (1999). *Cognitive therapy for personality disorders: A schema-focussed approach* (3rd ed.). Sarasota, FL: Professional Resource Press.

160. Shorey, H. S., & Snyder, C. R. (2006). The role of adult attachment styles in psychotherapy and psychotherapy outcomes. *Review of General Psychology*, *10*, 1-20.

161. Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: A model for health care utilization and somatization. *Psychosomatic Medicine*, *64*, 660-667.

162. O'Connor, M., & Elklit, A. (2008). Attachment styles, traumatic events, and PTSD: A cross-sectional investigation of adult attachment and trauma. *Attachment & Human Development*, *10*, 59-71.

163. Collins, N. L., & Feeney, B. C. (2004). Working models of attachment shape perceptions of social support: Evidence from experimental and observational studies. *Journal of Personality and Social Psychology*, *87*, 363-383.

164. Wiersma, J. E., Hovens, J. G. F. M., Van Oppen, P., Giltay, E. J., van Schaik, D. J. F., Beekman, A.T. F., & Penninx, B. W. J. H. (2009). The importance of childhood trauma and childhood life events for chronicity of depression in adults. *Journal of Clinical Psychiatry*, *70*, 983-989.

165. Ozer, E. J., Best, S. R., Lipsey, T. L. & Weiss D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*, 52-73.

166. Brown, R. J., Schrag, A., & Trimble, M. R. (2005). Dissociation, childhood interpersonal trauma, and family functioning in patients with somatization disorder. *American Journal of Psychiatry*, *162*, 899-905.

167. Spertus, I. L., Burns, J., Glenn, B., Lofland, K., & McCracken, L. (1999). Gender differences in associations between trauma history and adjustment among chronic pain patients. *Pain*, *82*, 97-102.

168. Pincus, T., & Morley, S. (2001). Cognitive-processing bias in chronic pain: A review and integration. *Psychological Bulletin*, *127*(5), 599-617.

169. Deary, V., Chalder, T., & Sharpe, M. (2007). The cognitive behavioural model of medically unexplained symptoms: A theoretical and empirical review. *Clinical Psychology Review*, *27*, 781-797.

170. Ursin, H. (2005). Press stop to start: The role of inhibition for choice and health. *Psychoneuroendocrinology*, *30*, 1059-1065.

171. Hayden, J. A., Côté, P., & Bombardier, C. (2006). Evaluation of the quality of prognosis studies in systematic reviews. *Annals of Internal Medicine*, *144*(6), 427-437.

172. Heitz, C. A. M., Hilfiker, R., Bachmann, H. J., Lorenz, T., Uebelhart, D., klipstein, A., & Brunner, F. (2009). Comparison of risk factors predicting return to work between patients with subacute and chronic non-specific low back pain: Systematic review. *European Spine Journal*, *18*, 1829-1835.

173. Gatchel, R. J., Pang, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: Scientific advances and future directions. *Psychological Bulletin*, *133*(4), 581-624.

174. Feuerstein, M. (1991). A multidisciplinary approach to the prevention, evaluation and management of work disability. *Journal of Occupational Rehabilitation*, *1*(1), 5-12.

175. Gatchel, R. J. (2004a). Comorbidity of chronic pain and mental health disorders: The biopsychosocial perspective. *American Psychologist*, *59*, 792-794.

176. Truchon, M. (2001). Determinants of chronic disability related to low back pain: Towards an integrative biopsychosocial model. *Disability and Rehabilitation*, *23*(17), 758-767.

177. Murphy, D. R., & Rosemblum, A. (2006). Return to work after two years of total disability: A case report. *Journal of Occupational Rehabilitation*, *16*, 253-260.

178. Martin, R. K., & McNeil, D. W. (2009). Review of motivational interviewing in promoting health behaviours. *Clinical Psychology Review*, *29*, 283-293.

179. Miller, W. R., & Rose, G. S. (2009). Toward a theory of motivational interviewing. *American Psychologist*, *64*(6), 527-537.

180. Littell, J. H., & Girvin, H. (2002). Stages of change: A critique. *Behavior Modification*, *26*(2), 223-273.

181. Britt, E., Blampied, N. M., & Hudson, S. M. (2003). Motivational interviewing: A review. *Australian Psychologist*, *38*, 193-201.

182. Franche, R.-L., Corbière, M., Lee, H., Breslin, F. C., & Hepburn, C. G. (2007). The readiness for return-to-work (RRTW) scale: Development and validation of a self-report staging scale in lost-time claimants with musculoskeletal disorders. *Journal of Occupational Rehabilitation*, *17*, 450-472.

183. Jensen, M. P., Nielson, W. R., & Kerns, R. D. (2003). Toward the development of a motivational model of pain self-management. *The Journal of Pain*, *4*(9), 477-492.

Appendice A : Search terms used in Psychinfo and Ovid Medline(R) databases

Appendix A: Search terms used in Psychinfo and Ovid Medline(R) databases

musculoskeletal	injury(ies)	return to work	distress	prognostic
low back	work injury(ies)	work status	depression	prognosis
back	occupational injury(ies)	employment status	anxiety	prospective
lumbar	industrial injury(ies)	compensation status	somatization	longitudinal
lumbago	work accident	job status	quality of life	factor(s)
upper limb(s)	occupational accident	absenteeism	well-being	indicator(s)
upper extremity(ies)	industrial accident	sick leave	recovery	predictor(s)
shoulder	pain	sickness absence	improvement	determinant(s)
arm	acute pain	time loss	outcome	
elbow	subacute pain	work loss		
hand	chronic pain	lost days		
wrist	disability(ies)	recurrence		
lower limb(s)	disabled	relapse		
lower extremity(ies)	chronic			
leg	chronicity			
knee				
ankle				
foot				

Appendice B: Quality assessment of studies with biological, psychological, environmental/ workplace and sociodemographic variables

Appendix B: Quality assessment of studies with biological, psychological, environmental/ workplace and sociodemographic variables

	1	2	3	4	5	6	7	8	9	10	11	total
HIGH QUALITY												
Crook et al., 1998 (82)	+	+	+	+	+	+	+	+	+	+	+	11
Streenstra et al., 2005 (155)	+	+	+	+	+	+	+	+	+	+	+	11
Karels et al., 2007 (124)	+	+	+	+	+	+	+	+	+	+	+	11
Bot et al., 2005 (71)	+	+	?	+	+	+	+	+	+	+	+	10
Feleus et al., 2007 (94)	+	+	?	+	+	+	+	+	+	+	+	10
Kuijperset al. 2006 (130)	+	+	+	?	+	+	+	+	+	+	+	10
Busch et al., 2007 (76)	+	+	+	-	+	+	+	+	+	+	+	10
Cherkin et al., 1996 (79)	+	+	+	-	+	+	+	+	-	+	+	9
Cole et al., 2002 (80)	+	+	+	-	-	+	+	+	+	+	+	9
Engel et al., 1996 (88)	-	+	+	-	+	+	+	+	+	+	+	9
Hogg-Johnson & Cole, 2003 (117)	+	+	?	+	+	+	+	+	-	+	+	9
Reiso et al., 2003 (145)	+	+	?	-	+	+	+	+	+	+	+	9
Van der Geizen et al., 2000 (164)	+	+	+	-	+	+	+	+	-	+	+	9
Dionne et al., 2007 (84)	+	+	?	?	+	+	+	+	+	+	+	9
Gross & Battié, 2006 (104)	+	+	?	?	+	+	+	+	+	+	+	9
Grotle et al., 2007 (108)	+	+	?	?	+	+	+	+	+	+	+	9
Heymans et al., 2006 (115)	+	+	?	?	+	+	+	+	+	+	+	9
Jones et al., 2006 (123)	-	+	+	-	+	+	+	+	+	+	+	9
Lotters et al., 2006 (135)	+	+	?	?	+	+	+	+	+	+	+	9
Turner et al., 2006 (161)	-	+	+	-	+	+	+	+	+	+	+	9
Atlas et al., 2000 (68)	+	+	?	?	-	+	+	+	+	+	+	8
Bot et al., 2005 (72)	+	+	?	?	+	+	+	+	-	+	+	8
Burton & Tillotson, 1991 (74)	+	+	+	+	+	+	+	+	-	-	-	8
Coste et al., 1994 (81)	+	+	+	?	+	+	+	+	-	+	-	8
Dionne et al., 1995 (85)	-	+	+	-	+	+	+	+	+	-	+	8
Dionne et al., 1997 (86)	-	+	+	-	+	+	+	+	+	-	+	8
Fransen et al., 2002 (96)	-	+	?	-	+	+	+	+	+	+	+	8
Hill et al., 2004 (116)	-	+	+	-	-	+	+	+	+	+	+	8
Karjalainen et al., 2003 (125)	-	+	?	?	+	+	+	+	+	+	+	8
Leroux et al., 2004 (133)	+	+	?	-	+	+	+	+	+	-	+	8
Macfarlane et al., 1999 (139)	-	+	+	-	+	+	+	+	-	+	+	8
Van Den Hoogen et al., 1997 (163)	+	+	+	-	-	+	+	+	-	+	+	8
Von Korff et al., 1993 (169)	-	+	+	-	+	+	+	+	+	-	+	8
Williams et al., 1998 (170)	+	+	+	+	-	+	+	+	-	-	+	8
Van der Waal & al, 2005 (165)	+	+	?	-	+	+	+	+	-	+	+	8
Faber et al., 2006 (93)	+	+	+	-	+	+	+	+	+	-	-	8
Grotle et al., 2005 (107)	+	+	?	?	+	+	+	+	-	+	+	8
Van den Heuvel et al., 2004 (162)	+	+	?	+	-	-	+	+	+	+	+	8
Turner et al., 2007 (160)	+	+	?	-	+	+	+	+	?	+	+	8
Swinkels-Meewisse et al., 2006 (157)	+	+	?	?	+	+	+	+	+	-	+	8
MODERATE QUALITY												
Deyo et al., 1988 (83)	+	+	?	+	+	+	+	+	-	-	-	7
Estlander et al., 1998 (92)	-	+	?	?	+	+	+	+	+	-	+	7
Gatchel et al., 1995a (99)	-	+	?	?	+	+	+	+	-	+	+	7
Haldorsen et al., 1998 (109)	-	+	+	?	+	+	+	+	-	-	+	7
Härkäpää, 1992 (111)	-	+	?	+	?	?	+	+	+	+	+	7
Koleck et al., 2006 (127)	+	+	+	?	+	+	+	+	-	-	-	7
Schultz et al., 2002 (149)	-	+	+	-	+	+	+	+	-	-	+	7
Schultz et al., 2004 (150)	-	+	+	-	+	+	+	+	-	-	+	7
Thomas et al., 1999 (159)	-	+	+	-	-	+	+	+	-	+	+	7
Van der Weide et al., 1999 (166)	-	+	?	+	+	+	+	+	-	+	-	7
Lotters et al., 2006 (136)	+	+	-	-	+	+	+	+	+	+	-	7
Storheim et al., 2005 (156)	+	+	?	-	+	+	+	+	-	+	-	7
MacDermid et al., 2007 (137)	+	+	?	?	+	+	+	+	-	-	+	7
Gallagher et al., 1995 (98)	-	+	-	?	+	+	-	+	+	-	+	6
Linton & Hallden, 1998 (134)	-	+	?	+	+	+	+	+	?	-	-	6

Ohlund et al. 1996 (143)	+	+	+	?	+	+	-	+	-	-	-	6
Sieben et al., 2005 (151)	+	+	?	-	-	-	+	+	-	+	+	6
Miranda et al., 2001 (142)	-	+	?	-	?	+	-	+	+	+	+	6
Soucy et al., 2006 (154)	+	+	?	-	-	-	+	+	-	+	+	6
Miranda et al., 2002 (141)	-	+	?	-	?	+	-	+	+	+	+	6
Gross & Battié, 2005 (105)	-	+	+	-	?	?	+	+	-	+	-	5
Lancourt & Kettelhut., 1992 (131)	-	-	+	?	+	+	+	+	-	-	-	5
Lanier & Stockton, 1988 (132)	-	+	?	+	+	+	-	+	-	-	-	5
LOW QUALITY												
Burton et al., 1997 (73)	-	+	+	?	?	-	+	+	-	-	-	4
Cats-Baril & Frymoyer, 1991 (78)	-	+	+	?	+	-	-	+	-	-	-	4
Gallagher et al., 1989 (97)	-	+	-	?	+	+	-	+	-	-	?	4
Klenerman et al., 1995 (126)	-	+	?	?	-	+	+	?	?	-	-	3
Hankin & Killian, 2004 (110)	-	+	-	-	-	-	+	?	-	-	-	2

Appendice C: Level of evidence for predictors of outcomes of musculoskeletal disorders in prospective studies with sociodemographical and biopsychosocial factors

Appendix C: Level of evidence for predictors of outcomes† of musculoskeletal disorders in prospective studies with sociodemographical and biopsychosocial factors

Predictor	Outcome	Significant findings	High quality	Moderate quality	Low quality	Overall LOE	(Sub)Acute LOE	Chronic LOE	Mixed LOE
Age	RTW	12/37 (32.4%)	7/18 (38.9%)	3/16 (18.8%)	2/3 (66.6%)	Inconclusive	Strong no		
	Disability	7/26 (26.9%)	6/19 (31.6%)	1/6 (16.7%)	0/1 (0%)	Inconclusive			Strong no
	Pain	7/11 (63.6%)	4/7 (57.1%)	3/4 (75%)	-	Inconclusive	Strong	No evidence	Strong no
	Qol	2/3 (66.6%)	2/3 (66.6%)	-	-	Inconclusive		No evidence	No evidence
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive		No evidence	
Gender	RTW	7/33 (21.2%)	5/17 (29.4%)	2/12 (14.3%)	0/2 (0%)	Inconclusive			Strong no
	Disability	4/22 (18.2%)	2/16 (12.5%)	2/5 (40%)	0/1 (0%)	Strong no		Inconclusive	Strong no
	Pain	3/10 (30%)	3/7 (40%)	0/3 (20%)	-	Inconclusive		No evidence	
	Qol	0/3 (0%)	0/3 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	
Education	RTW	4/25 (16%)	1/10 (10%)	2/12 (16.7%)	1/3 (33.3%)	Strong no		Weak no	Inconclusive
	Disability	4/18 (22.2%)	2/14 (14.3%)	2/4 (50%)	-	Strong no		No evidence	
	Pain	1/6 (16.6%)	0/6 (0%)	1/1 (100%)	-	Strong no	Weak no	No evidence	
	Qol	0/3 (0%)	0/3 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Marital status/living arrangement	RTW	1/18 (5.6%)	0/7 (0%)	1/10 (10%)	0/1 (0%)	Strong no		Moderate no	
	Disability	0/9 (0%)	0/7 (0%)	0/1 (0%)	0/1 (0%)	Strong no	Moderate no	Inconclusive	
	Pain	0/3 (0%)	0/3 (0%)	-	-	Strong no	No evidence	No evidence	
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Dependant	RTW	1/5 (20%)	0/1 (0%)	1/4 (25%)	-	Moderate no	Inconclusive	No evidence	
	Disability	0/5 (0%)	0/4 (0%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	0/4 (0%)	0/4 (0%)	-	-	Strong no	Weak no	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			

Financial variables / social class	RTW	2/14 (14.3%)	2/7 (28.6%)	0/6 (0%)	0/1 (0%)	Inconclusive	Strong no		
	Disability	0/5 (0%)	0/4 (0%)	0/1 (0%)	-	Strong no	Moderate no	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	1/1 (100%)	1/1 (100%)	-	-	Weak	No evidence	No evidence	
Ethnic background	RTW	2/9 (22.2%)	1/5 (20%)	0/3 (0%)	1/1 (100%)	Strong no	Inconclusive	Inconclusive	Moderate no
	Disability	1/6 (16.6%)	0/4 (0%)	1/2 (50%)	-	Strong no	Moderate no	No evidence	
	Pain	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no	Weak no	No evidence	Inconclusive
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	1/1 (100%)	1/1 (100%)	-	-	Weak		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Lifestyle - smoking	RTW	1/15 (6.7%)	1/6 (16.7%)	0/8 (0%)	0/1 (0%)	Strong no		Weak no	Inconclusive
	Disability	2/9 (22.2%)	1/6 (16.7)	1/3 (33.3%)	-	Strong no	Inconclusive	No evidence	Strong no
	Pain	0/6 (0%)	0/4 (0%)	0/2 (0%)	-	Strong no	Weak no	No evidence	Strong no
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Lifestyle – BMI	RTW	1/10 (10%)	1/6 (16.7%)	0/4 (0%)	-	Strong no		No evidence	
	Disability	1/12 (8.33%)	1/9 (11.1%)	0/3 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	0/10 (0%)	0/6 (0%)	0/4 (0%)	-	Strong no		No evidence	
	Qol	1/2 (50%)	1/2 (50%)	-	-	Inconclusive		No evidence	No evidence
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Lifestyle - exercise	RTW	1/11 (9.1%)	0/5 (0%)	1/5 (20%)	0/1 (0%)	Strong no		No evidence	
	Disability	3/11 (27.3%)	3/9 (33.3%)	0/2 (0%)	-	Inconclusive		No evidence	
	Pain	2/7 (28.6%)	2/5 (40%)	0/2 (0%)	-	Inconclusive		No evidence	
	Qol	1/1 (100%)	1/1 (100%)	-	-	Weak		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Type of onset	RTW	0/4 (0%)	0/2 (0%)	0/1 (0%)	0/1 (0%)	Strong no		No evidence	Inconclusive
	Disability	3/10 (30%)	3/7 (42.9%)	0/3 (0%)	-	Inconclusive	Strong no	No evidence	
	Pain	0/4 (0%)	0/3 (0%)	0/1 (0%)	-	Moderate no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	

Cause of symptoms	RTW	3/10 (30%)	1/4 (25%)	1/4 (25%)	1/2 (50%)	Inconclusive[2]	Strong no	No evidence	
	Disability	3/10 (30%)	3/7 (42.9%)	0/3 (0%)	-	Inconclusive		No evidence	
	Pain	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Type of diagnosis	RTW	1/5 (20%)	0/2 (0%)	1/3 (33.3%)	-	Strong no	Inconclusive	Weak no	Weak no
	Disability	1/7 (14.3%)	1/5 (20%)	0/2 (0%)	-	Strong no	Weak no	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Pain site	RTW	1/9 (11.1%)	1/4 (25%)	0/4 (0%)	0/1 (0%)	Strong no		Weak no	Inconclusive
	Disability	4/8 (50%)	3/6 (50%)	1/1 (100%)	0/1 (0%)	Inconclusive			
	Pain	1/2 (50%)	1/2 (50%)	-	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Duration of episode	RTW	4/17 (23.5%)	2/8 (25%)	2/8 (25%)	0/1 (0%)	Strong no		Weak no	Inconclusive
	Disability	9/20 (45%)	9/16 (56.3%)	0/3 (0%)	0/1 (0%)	Inconclusive			
	Pain	3/4¾ (75%)	3/3 (100%)	0/1 (0%)	-	Strong	No evidence	No evidence	
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	
Length of time off work	RTW	3/7 (42.9%)	1/2 (50%)	2/4 (50%)	0/1 (0%)	Inconclusive		No evidence	
	Disability	0/4 (0 %)	0/2 (0%)	0/2 (0%)	-	Strong no		No evidence	No evidence
	Pain	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Qol	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Pain intensity	RTW	10/27 (37%)	9/15 (60%)	1/9 (11.1%)	0/3 (0%)	Inconclusive			
	Disability	8/21 (38.1%)	7/17 (41.2%)	1/3 (33.3%)	0/1 (0%)	Inconclusive			
	Pain	5/7 (71.4%)	5/7 (71.4%)	-	-	Inconclusive		No evidence	Strong
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no		No evidence	No evidence
	Recurrence	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	

Functional disability	RTW	22/33 (66.7%)	11/17(64.7%)	9/14 (64.3%)	2/2 (100%)	Inconclusive			
	Disability	12/21 (57.1%)	9/16 (56.3%)	3/5 (60%)	-	Inconclusive			
	Pain	2/9 (22.2%)	0/7 (0%)	2/2 (100%)	-	Strong no		No evidence	
	Qol	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive		No evidence	No evidence
	Distress	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no		No evidence	No evidence
	Recurrence	2/3 (66.6%)	2/3 (66.6%)	-	-	Inconclusive	No evidence	No evidence	
Injury severity	RTW	0/7 (0%)	0/4 (0%)	0/3 (0%)	-	Strong no		Weak no	Weak no
	Disability	0/1 (0%)	-	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
	Pain	0/1 (0%)	-	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Persistence of symptoms	RTW	3/8 (37.5%)	1/5 (20%)	1/3 (33.3%)	-	Inconclusive	Strong no	No evidence	
	Disability	5/11 (45.5%)	4/10 (40%)	1/1 (0%)	-	Inconclusive	Strong no	No evidence	
	Pain	2/4 (50%)	1/3 (33.3%)	1/1 (100%)	-	Inconclusive	Weak no	No evidence	
	Qol	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Medical history – previous episodes	RTW	4/14 (28.6%)	2/7 (28.6%)	1/5 (20%)	1/2 (50%)	Inconclusive		No evidence	Strong no
	Disability	10/21 (47.6%)	6/15 (40%)	3/5 (60%)	1/1 (100%)	Inconclusive	Strong no	No evidence	
	Pain	5/10 (50%)	3/6 (50%)	1/3 (33.3%)	1/1 (100%)	Inconclusive	Inconclusive[2]	No evidence	Strong
	Qol	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Medical history – previous sick leave	RTW	1/7 (14.3%)	1/5 (20%)	0/2 (0%)	-	Strong no		Inconclusive	Weak no
	Disability	0/3 (0%)	0/2 (0%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Medical history – previous surgeries	RTW	1/6 (16.7%)	1/2 (50%)	0/3 (0%)	0/1 (0%)	Inconclusive	Moderate no		
	Disability	0/4 (0%)	0/3 (0%)	0/1 (0%)	-	Strong no	Weak no	No evidence	
	Pain	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	

Medical history – past	RTW	1/5 (20%)	0/3 (0%)	1/2 (50%)	-	Strong no	Moderate no	No evidence	Inconclusive
treatment or medical	Disability	1/5 (20%)	1/4 (25%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
visits	Pain	0/1 (0%)	-	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Medical history – past	RTW	0/2 (0%)	0/1 (0%)	-	1/1 (100%)	Inconclusive		No evidence	Weak no
hospitalization	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Medical history –	RTW	1/3 (33.3%)	0/1 (0%)	1/2 (50%)	-	Inconclusive		No evidence	Moderate no
Xrays or scans	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Medical history –	RTW	0/3 (0%)	0/1 (0%)	0/1 (0%)	0/1 (0%)	Moderate no	No evidence	No evidence	
medication	Disability	0/6 (0%)	0/5 (0%)	0/1 (0%)	-	Strong no		No evidence	
	Pain	0/3 (0%)	0/3 (0%)	-	-	Strong no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence					No evidence			
Comorbidity	RTW	1/7 (14.3%)	1/5 (20%)	0/2 (0%)	-	Strong no		Weak no	Inconclusive
	Disability	5/11 (45.5%)	5/11 (45.5%)	-	-	Inconclusive	Strong no	No evidence	
	Pain	4/5 (80%)	4/5 (80%)	-	-	Strong	Inconclusive	No evidence	Inconclusive
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Clinical examination –	RTW	9/17 (52.9%)	5/11 (45.5%)	4/6 (66.6%)	-	Inconclusive		Weak no	
radiation/sciatica	Disability	3/11 (27.3%)	1/6 (16.7%)	2/5 (40%)	-	Inconclusive[2]		No evidence	Moderate no
	Pain	1/4 (25%)	1/3 (33.3%)	0/1 (0%)	-	Inconclusive		No evidence	Moderate no
	Qol	1/2 (50%)	1/2 (50%)	-	-	Inconclusive		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	1/2 (50%)	1/2 (50%)	-	-	Inconclusive	No evidence	No evidence	

Clinical examination – straight leg raising	RTW	1/7 (14.3%)	0/2 (0%)	1/4 (25%)	0/1 (0%)	Strong no	Moderate no	No evidence	Moderate no
	Disability	2/4 (50%)	1/2 (50%)	1/2 (50%)	-	Inconclusive		No evidence	
	Pain	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Clinical examination – neurological symptoms	RTW	0/5 (0%)	0/1 (0%)	0/3 (0%)	0/1 (0%)	Moderate no		No evidence	Weak no
	Disability	3/5 (60%)	3/5 (60%)	-	-	Inconclusive	Weak no	No evidence	
	Pain	0/2 (0%)	0/2 (0%)	-	-	Strong no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Clinical examination – range of movement	RTW	2/8 (25%)	-	2/7 (28.6%)	0/1 (0%)	Inconclusive		No evidence	
	Disability	2/6 (33.3%)	1/4 (25%)	1/2 (50%)	-	Inconclusive		No evidence	
	Pain	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Clinical examination – miscellaneous§	RTW	6/9 (66.6%)	2/2 (100%)	4/5 (80%)	0/2 (0%)	See text			
	Disability	5/5 (100%)	4/4 (100%)	-	1/1 (100%)	See text			
	Pain	3/4 (75%)	3/3 (100%)	-	0/1 (0%)	See text			
	Qol	-	-	-	-	See text			
	Distress	1/1 (100%)	1/1 (100%)	-	-	See text			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	See text			
Psychological distress - Depression	RTW	2/11 (18.1%)	0/2 (0%)	2/8 (25%)	0/1 (0%)	Strong no	Inconclusive	Inconclusive	Moderate no
	Disability	2/10 (20%)	1/6 (16.7%)	1/3 (33.3%)	0/1 (0%)	Strong no	Moderate no	Inconclusive	
	Pain	1/1 (100%)	-	1/1 (100%)	-	Inconclusive	No evidence	No evidence	No evidence
	Qol	1/1 (100%)	1/1 (100%)	-	-	Weak		No evidence	No evidence
	Distress	1/1 (100%)	-	1/1 (100%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Psychological distress - anxiety	RTW	4/8 (50%)	0/1 (0%)	3/6 (50%)	1/1 (100%)	Inconclusive			
	Disability	1/6 (16.7%)	0/2 (0%)	1/3 (33.3%)	0/1 (0%)	Strong no	Moderate no	Inconclusive	Weak no
	Pain	0/2 (0%)	-	0/2 (0%)	-	Weak no	No evidence	No evidence	No evidence
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			

Psychological distress - somatization	RTW	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no	No evidence	No evidence	
	Disability	5/7 (71.4%)	5/6 (83.3%)	-	0/1 (0%)	Inconclusive[1]	No evidence		Strong
	Pain	1/1 (100%)	-	1/1 (100%)	-	Inconclusive	No evidence	No evidence	No evidence
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Psychological distress (general measures)	RTW	1/8 (12.5%)	1/4 (25%)	0/2 (0%)	0/2 (0%)	Strong no		Inconclusive	Weak no
	Disability	6/11 (54.5%)	5/10 (50%)	1/1 (100%)	-	Inconclusive	Strong	No evidence	
	Pain	1/4 (25%)	1/4 (25%)	-	-	Strong no	Weak no	No evidence	Inconclusive
	Qol	-	-	-	-	No evidence			
	Distress	1/1 (100%)	1/1 (100%)	-	-	Weak		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Psychological distress – substance use/abuse	RTW	0/8 (0%)	0/2 (0%)	0/3 (0%)	0/3 (0%)	Strong no	Inconclusive	Weak no	Moderate no
	Disability	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no	Inconclusive	No evidence	Weak no
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Personality	RTW	3/6 (50%)	-	2/3 (66.6%)	1/3 (33.3%)	Inconclusive			
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Recovery expectations	RTW	14/19 (73.7%)	9/12 (75%)	5/7 (71.4%)	-	Inconclusive[1]	Strong		
	Disability	3/3 (100%)	3/3 (100%)	-	-	Strong		No evidence	Weak
	Pain	2/3 (66.6%)	2/2 (100%)	0/1 (0%)	-	Inconclusive[1]	Strong	No evidence	No evidence
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	-	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
Coping	RTW	1/8 (12.5%)	0/2 (0%)	1/4 (25%)	0/2 (0%)	Strong no	Weak no	No evidence	Inconclusive
	Disability	6/7 (85.7%)	4/5 (80%)	2/2 (100%)	-	Strong	Weak	No evidence	Strong
	Pain	3/3 (100%)	3/3 (100%)	-	-	Strong	No evidence	No evidence	Strong
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	

Catastrophization	RTW	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Disability	1/6 (16.7%)	1/4 (25%)	0/2 (0%)	-	Strong no	Weak no	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Fear-avoidance	RTW	6/9 (66.6%)	2/4 (50%)	3/4 (75%)	1/1 (100%)	Inconclusive		No evidence	Weak
	Disability	5/13 (38.5%)	4/11 (36.4%)	0/1 (0%)	1/1 (100%)	Inconclusive[2]		No evidence	Strong no
	Pain	2/5 (40%)	2/4 (50%)	-	0/1 (0%)	Inconclusive		No evidence	Strong
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Locus of control	RTW	5/8 (62.5%)	1/3 (33.3%)	3/4 (75%)	1/1 (100%)	Inconclusive		Moderate	
	Disability	0/4 (0%)	0/3 (0%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			
Intention to RTW (motivation)	RTW	0/2 (0%)	-	0/1 (0%)	0/1 (0%)	Inconclusive	No evidence	No evidence	
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Pain behaviours	RTW	3/6 (50%)	0/1 (0%)	3/4 (75%)	0/1 (0%)	Inconclusive	No evidence	Weak no	
	Disability	2/2 (100%)	1/1 (100%)	1/1 (100%)	-	Moderate	No evidence	No evidence	
	Pain	0/1 (0%)	-	0/1 (0%)	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Social support	RTW	0/9 (0%)	0/2 (0%)	0/6 (0%)	0/1 (0%)	Strong no	Weak no	Weak no	Moderate no
	Disability	2/5 (40%)	2/4 (50%)	0/1 (0%)	-	Inconclusive		No evidence	
	Pain	1/2 (50%)	1/2 (50%)	-	-	Inconclusive	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	0/1 (0%)	-	0/1 (0%)	-	Inconclusive		No evidence	No evidence
	Recurrence	-	-	-	-	No evidence			

Subjective health status	RTW	8/17 (47.1%)	5/9 (55.6%)	3/8 (37.5%)	-	Inconclusive		Weak	Strong
	Disability	2/11 (18.1%)	1/9 (11.1%)	1/2 (50%)	-	Strong no		No evidence	
	Pain	3/8 (37.5%)	3/8 (37.5%)	-	-	Inconclusive	Strong no	No evidence	Inconclusive
	Qol	0/2 (0%)	0/2 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Stressful life events	RTW	0/5 (0%)	0/2 (0%)	0/2 (0%)	0/1 (0%)	Strong no	Weak no	No evidence	Moderate no
	Disability	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Social/family pressure	RTW	-	-	-	-	No evidence			
	Disability	0/2 (0%)	0/2 (0%)	-	-	Strong no	No evidence	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Readiness to change	RTW	-	-	-	-	No evidence			
	Disability	1/1 (100%)	-	-	1/1 (100%)	Inconclusive	No evidence		No evidence
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Satisfaction with care	RTW	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	Strong no	No evidence	Weak
	Disability	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Clinicien judgement	RTW	0/3 (0%)	0/1 (0%)	0/1 (0%)	0/1 (0%)	Moderate no	No evidence	No evidence	
	Disability	1/2 (50%)	1/2 (50%)	-	-	Inconclusive	No evidence	No evidence	
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/2 (0%)	0/2 (0%)	-	-	Strong no	No evidence	No evidence	

Exp. treatment effect	RTW	1/2 (50%)	1/2 (50%)	-	-	Inconclusive		No evidence	No evidence
	Disability	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Vocational sector	RTW	0/3 (0%)	0/3 (100%)	-	-	Strong no	Weak no	Strong no	No evidence
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Type of occupation	RTW	1/11 (9.1%)	0/7 (0%)	1/3 (33.3%)	0/1 (0%)	Strong no		Inconclusive	
	Disability	1/6 (16.7%)	1/4 (25%)	0/2 (0%)	-	Strong no		No evidence	Weak
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Work schedule	RTW	0/6 (0%)	0/3 (0%)	0/3 (0%)	-	Strong no		Weak no	Inconclusive
	Disability	0/5 (0%)	0/4 (0%)	0/1 (0%)	-	Strong no	Moderate no	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Job stability	RTW	2/11 (18.2%)	1/4 (25%)	1/6 (14.3%)	0/1 (0%)	Strong no		Weak no	Inconclusive
	Disability	0/4 (0%)	0/3 (0%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Size of workplace	RTW	0/5 (0%)	0/3 (0%)	0/2 (0%)	-	Strong no	Moderate no	Weak no	Weak no
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			

Physical job demands	RTW	6/29 (20.7%)	4/14 (28.6%)	2/13 (15.4%)	0/2 (0%)	Inconclusive		Strong no	Strong no
	Disability	3/12 (25%)	2/9 (22.2%)	1/3 (33.3%)	-	Strong no		No evidence	
	Pain	1/8 (12.5%)	0/4 (0%)	1/4 (25%)	-	Strong no		No evidence	Moderate no
	Qol	0/3 (0%)	0/3 (0%)	-	-	Strong no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	1/3 (33.3%)	1/3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	
Psychological job demands	RTW	4/17 (23.5%)	1/8 (12.5%)	3/8 (37.5%)	0/1 (0%)	Strong no		Inconclusive	
	Disability	2/3 (66.6%)	1/2 (50%)	1/1 (100%)	-	Inconclusive		No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Control over work (Decision latitude / skills discretion)	RTW	1/12 (8.3%)	0/6 (0%)	1/6 (16.6%)	-	Strong no		Weak no	
	Disability	2/5 (40%)	2/4 (50%)	0/1 (0%)	-	Inconclusive	Moderate no	No evidence	
	Pain	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	1/1 (100%)	1/1 (100%)	-	-	Weak	No evidence	No evidence	
Job satisfaction	RTW	4/21 (19%)	4/10 (40%)	0/9 (0%)	1/2 (50%)	Inconclusive			
	Disability	2/10 (20%)	1/6 (16.7%)	1/4 (25%)	-	Strong no		No evidence	Weak no
	Pain	2/4 (50%)	1/3 (33.3%)	1/1 (100%)	-	Inconclusive		No evidence	No evidence
	Qol	1/2 (50%)	1/2 (50%)	-	-	Inconclusive		No evidence	No evidence
	Distress	0/2 (0%)	0/1 (0%)	0/1 (0%)	-	Moderate no		No evidence	No evidence
	Recurrence	1/1 (100%)	1/1 (100%)	-	-	Weak	No evidence	No evidence	
Work social support	RTW	3/15 (20%)	2/9 (22.2%)	1/6 (16.7%)	-	Strong no			Inconclusive
	Disability	0/4 (0%)	0/3 (0%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	
Workplace reaction to injury	RTW	1/5 (20%)	0/3 (0%)	1/2 (50%)	-	Strong no		No evidence	Inconclusive
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			

Compensation (current)	RTW	5/11 (45.5%)	3/6 (50%)	1/3 (33.3%)	1/2 (50%)	Inconclusive		Weak no	
	Disability	1/5 (20%)	1/4 (25%)	0/1 (0%)	-	Strong no	Inconclusive	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	0/1 (0%)	0/1 (0%)	-	-	Weak no		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Compensation (previous)	RTW	1/7 (14.3%)	0/5 (0%)	1/2 (50%)	-	Strong no		No evidence	
	Disability	1/.3 (33.3%)	1/.3 (33.3%)	-	-	Inconclusive	No evidence	No evidence	
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	1/1 (100%)	1/1 (100%)	-	-	Weak	No evidence	No evidence	
Litigation	RTW	2/5 (40%)	1/1 (100%)	0/2 (0%)	1/2 (50%)	Inconclusive		No evidence	
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Disability management	RTW	4/8 (50%)	4/5 (80%)	0/3 (0%)	-	Inconclusive[1]	Strong	Weak	Moderate no
	Disability	-	-	-	-	No evidence			
	Pain	-	-	-	-	No evidence			
	Qol	-	-	-	-	No evidence			
	Distress	-	-	-	-	No evidence			
	Recurrence	-	-	-	-	No evidence			
Employment status	RTW	4/11 (36.4%)	1/6 (16.7%)	2/4 (50%)	1/1 (100%)	Inconclusive[2]	Strong no	No evidence	
	Disability	5/19 (26.3%)	4/15 (26.7%)	0/3 (0%)	1/1 (100%)	Inconclusive			Strong no
	Pain	2/6 (33.3%)	2/5 (40%)	0/1 (0%)	-	Inconclusive	Strong	No evidence	Strong no
	Qol	1/2 (50%)	1/2 (50%)	-	-	Inconclusive		No evidence	No evidence
	Distress	-	-	-	-	No evidence			
	Recurrence	0/1 (0%)	0/1 (0%)	-	-	Weak no	No evidence	No evidence	

† Given the limited number of studies with each miscellaneous outcome variable, we did not include their level of evidence in this table. See text available from author for details.

§ For miscellaneous physical examination prognostic factors, the different variables included in this category and various level of evidence or no evidence makes it impossible to extrapolate general conclusions. See text available from author for details on each prognostic factor.

1. Strong in HQ studies
2. Strong no in HQ studies

Appendice D: Prognostic factors measured for each study included

Appendix D: Prognostic factors measured for each study included†

	Biological/medical									Psychological										Social/environmental						
	Sociodemographic	Lifestyle[1]	Medical history[2]	Episode characteristics[3]	Duration of episode[4]	Comorbidity	Clin. Exam./symptoms & signs[5]	Funtional status	Pain	Personality traits	Distress	General health perception	Recovery expectations[6]	Locus of control	Catastrophizing	Coping	Pain-behavior	Fear-avoidance	Social support	Workplace characteristics[7]	Work support [8]	Work demands /conditions[9]	Work satisfaction	Compensation / litigation[10]	Disability management	Employment status
Back																										
(sub)Acute																										
Carey et al., (77)	√		√		√		√	√	√															√		√
Cats-Baril (78)	√	√	√	√			√		√	√	√					√				√		√	√	√		√
Cherkin (79)	√	√	√	√	√		√	√			√											√	√	√		√
Coste (81)	√		√	√	√		√	√	√		√									√			√	√		√
Epping-Jordan (90)	√							√	√		√															
Fransen (96)	√	√	√					√	√			√		√							√	√	√	√	√	
Gatchel (99)	√		√		√			√		√	√	√												√		
Gatchel (100)	√							√	√	√	√															
Haldorsen (109)	√	√	√		√		√			√	√	√	√	√					√	√		√				
Hunt (119)			√	√			√	√									√									
Infante (121)	√	√	√	√	√		√													√		√	√			
Infante (122)	√	√		√			√	√												√		√	√			
Karjalainen (125)	√	√	√	√	√		√	√	√			√	√							√			√			
Klenerman (126)	√		√	√			√				√							√								√
Koleck (127)	√	√	√	√					√		√			√	√	√			√				√			
Lanier (132)	√	√	√	√			√	√			√									√		√				
Macfarlane (139)	√	√	√	√	√		√		√		√	√											√			√
McIntosh (140)	√	√	√	√	√	√	√	√	√													√		√		
Schiottz-Christensen (148)	√	√	√	√	√		√																			√
Sieben (151)	√		√	√	√		√	√	√		√				√			√		√			√	√		√
Singer (152)	√		√	√	√		√	√	√															√		
Tate (158)	√		√	√				√	√											√					√	
Thomas (159)	√	√	√	√	√		√				√	√											√			√
Van der Weide (166)	√	√	√	√	√		√	√	√			√		√		√				√	√	√	√			
Williams (170)	√							√	√		√												√			
Faber et al., (93)	√	√	√		√	√	√	√	√									√		√		√				√
Grotle et al., (107)	√	√	√	√	√	√	√	√	√		√							√					√			√

	Biological/medical									Psychological										Social/environmental						
	Sociodemographic	Lifestyle[1]	Medical history[2]	Episode characteristics[3]	Duration of episode[4]	Comorbidity	Clin. Exam./symptoms & signs[5]	Funtional status	Pain	Personality traits	Distress	General health perception	Recovery expectations[6]	Locus of control	Catastrophizing	Coping	Pain-behavior	Fear-avoidance	Social support	Workplace characteristics[7]	Work support [8]	Work demands /conditions[9]	Work satisfaction	Compensation / litigation[10]	Disability management	Employment status
Grotle et al., (108)	√	√	√	√	√	√	√	√	√		√							√					√			√
Heneweer et al., (113)								√	√							√		√								
Heymans et al., (115)	√	√	√		√		√	√	√				√							√	√	√	√			√
Kovacs et al., (129)	√				√		√	√	√																	
Storheim et al., (156)	√	√	√		√		√	√	√		√	√	√					√	√	√	√	√	√			
Streenstra et al., (155)	√		√				√	√					√							√						√
Turner et al., (161)	√							√	√		√		√		√			√			√					
Swinkels-Meewisse & al(157)	√			√	√		√	√	√									√								√
Soucy et al., (154)	√							√	√									√		√	√	√	√	√	√	
Chronic																										
Dozois (87)	√			√	√		√	√	√		√		√			√										
Fishbain (95)	√																					√	√			
Härkäpää (111)	√							√			√		√	√						√			√			
Härkäpää (112)	√		√		√			√			√			√												
Sandstörm (147)	√				√								√													
Van der Geizen (164)	√	√	√	√	√	√	√		√			√	√						√	√	√	√	√	√		
Mixed																										
Atlas (68)	√	√	√	√	√	√	√	√	√			√								√		√	√	√		√
Burton (74)	√	√	√	√	√		√		√								√			√						√
Burton (75)	√		√		√		√	√	√		√			√	√	√	√	√								
Deyo (83)	√	√	√	√	√		√	√				√					√					√				√
Gallagher[1] (97)	√	√		√	√		√	√	√	√	√		√	√		√	√		√			√	√	√		
Gallagher[1] (98)	√	√		√	√		√	√	√	√	√		√	√		√	√		√			√	√	√		
Gross (105)	√*		√*	√*	√*		√*						√									√*				√*
Hunter (120)	√	√	√		√		√	√	√											√		√		√		
Kool (128)					√		√		√													√				√
Lancourt (131)	√	√	√		√	√	√	√								√						√	√	√	√	√
Leroux (133)	√	√	√	√				√	√		√	√						√		√	√	√	√			
Ohlund (143)	√	√	√	√	√			√	√		√	√					√		√	√	√	√	√			
Oleinick (144)	√			√																√				√		

	Biological/medical									Psychological										Social/environmental						
	Sociodemographic	Lifestyle[1]	Medical history[2]	Episode characteristics[3]	Duration of episode[4]	Comorbidity	Clin. Exam./symptoms & sions[5]	Funtional status	Pain	Personality traits	Distress	General health perception	Recovery expectations[6]	Locus of control	Catastrophizing	Coping	Pain-behavior	Fear-avoidance	Social support	Workplace characteristics[7]	Work support[8]	Work demands /conditions[9]	Work satisfaction	Compensation / litigation[10]	Disability management	Employment status
Reiso (145)	√			√			√	√	√				√							√				√		
Schultz (149)	√			√	√		√	√	√		√	√	√				√		√	√	√	√	√	√	√	√
Schultz (150)	√				√			√	√		√	√	√						√	√	√	√		√		√
Van Den Hoogen (163)	√		√	√	√		√	√	√			√										√				
Dionne et al., (84)	√	√	√	√	√		√	√	√		√	√	√	√		√		√	√	√	√	√	√	√	√	√
Gross & Battié, (106)					√		√						√								√					
Jones et al., (123)	√		√		√			√	√							√										√
Van den Heuvel et al., (162)	√	√			√			√	√							√					√	√				
Unknown																										
Abenhaim (67)	√			√																√				√		
Neck																										
(sub)Acute																										
Hill (116)	√	√	√			√					√	√										√	√			√
Mixed																										
Hoving (118)	√		√	√	√	√	√	√	√																	
Upper																										
(sub)Acute																										
MacDermid (138)	√			√																				√		
MacDermid et al., (137)	√	√	√	√			√	√				√										√		√		
Turner et al., (160)	√			√				√			√		√		√			√			√	√	√		√	
Chronic																										
Burton (73)	√			√	√			√	√	√	√									√						
Mixed																										
Bot (71)	√	√	√	√	√	√		√	√		√	√				√		√	√							√

	Biological/medical									Psychological										Social/environmental						
	Sociodemographic	**Lifestyle**[1]	**Medical history**[2]	**Episode characteristics**[3]	**Duration of episode**[4]	**Comorbidity**	**Clin. Exam./symptoms & signs**[5]	**Funtional status**	**Pain**	**Personality traits**	**Distress**	**General health perception**	**Recovery expectations**[6]	**Locus of control**	**Catastrophizing**	**Coping**	**Pain-behavior**	**Fear-avoidance**	**Social support**	**Workplace characteristics**[7]	**Work support** [8]	**Work demands /conditions**[9]	**Work satisfaction**	**Compensation / litigation**[10]	**Disability management**	**Employment status**
Gross & Battié, (104)	√*		√*		√*		√	√*	√*				√*									√*		√*		√*
Kuijpers et al., (130)	√		√	√	√	√	√	√	√		√			√	√	√		√				√				
Van der Windt et al., (167)	√		√	√	√	√		√	√																	
Smidt et al., (153)	√		√		√	√			√											√						
Unknown																										
Miranda et al., (142)	√	√	√								√											√				
Lower																										
Mixed																										
Van der Waal et al., (82)	√	√	√	√	√	√		√	√		√	√				√		√	√							√
Unknown																										
Miranda et al., (141)	√	√	√								√											√	√			
Mixed																										
(sub)Acute																										
Cole (80)	√*		√*			√*		√*	√*				√							√*		√*			√*	
Hogg-Johhson (117)	√		√	√	√	√	√	√	√			√	√							√	√		√	√	√	
Linton (134)	√		√	√	√			√	√		√		√			√		√				√	√			
Lotters et al., (135)	√	√	√	√	√	√	√	√	√			√	√								√	√				
Lotters et al., (136)	√					√			√		√	√						√		√		√		√		
Chronic																										
Crook (82)	√			√				√	√		√						√			√		√			√	
Ericsson (91)	√				√				√	√	√															
Hankin (110)	√			√	√				√		√															√
Busch et al., (76)	√		√								√		√	√								√				

	Biological/medical									Psychological										Social/environmental						
	Sociodemographic	Lifestyle[1]	Medical history[2]	Episode characteristics[3]	Duration of episode[4]	Comorbidity	Clin. Exam./symptoms & signs[5]	Funtional status	Pain	Personality traits	Distress	General health perception	Recovery expectations[6]	Locus of control	Catastrophizing	Coping	Pain-behavior	Fear-avoidance	Social support	Workplace characteristics[7]	Work support [8]	Work demands /conditions[9]	Work satisfaction	Compensation / litigation[10]	Disability management	Employment status
Mixed																										
Borg (70)	√		√		√																					
Bot (72)	√	√	√	√	√	√		√	√		√	√				√		√	√							√
Engel (88)	√			√				√			√													√		
Dionne (85)	√	√	√	√	√	√					√		√	√						√		√		√		
Dionne (86)	√	√	√	√	√	√		√	√		√	√			√					√		√		√		√
Von Korff (169)	√			√	√			√			√													√		√
Boersma et al., (69)	√								√		√		√					√								
Enthoven et al., (89)	√	√	√		√	√		√	√														√			√
Feleus et al., (94)	√	√	√	√	√	√		√	√		√	√		√	√			√	√	√		√				√
Gauthier et al., (101)	√			√	√			√	√		√				√			√								
Van der Windt et al., (168)	√			√	√	√	√	√	√		√				√			√								
Grooten et al., (102)																				√	√	√				
Grooten, (103)	√	√	√	√	√	√	√																			
Karels et al., (124)	√	√	√	√	√	√			√		√				√			√	√	√	√	√				√
Hewitt et al., (114)	√			√	√			√	√																	√
Unknown																										
Abenhaim (66)	√			√																√						
Estlander (92)	√	√						√			√		√								√	√				
Rossignol (146)	√			√																√						

* Confounders for which no information on the level of significance was available. † Some potential prognostic factors found in few studies were not included in this table such as: intention to RTW, stressful life events, intention to RTW, readiness to change, satisfaction with care, clinician judgment and expectation of treatment effect.

1. Includes smoking, exercise and/or BMI; 2. Includes prior episode or number of prior episodes, surgery, treatment, medical visits, hospital, X rays and/or medication; 3. Includes type of onset, cause of symptoms, diagnosis, pain site, injury severity and/or persistence of symptoms; 4. Includes duration of symptoms and/or of work absence; 5. Includes symptoms and signs from examination, self-reports or medical record; 6. Includes expectations of recovery and/or subjective work capacity; 7. Includes work sector, occupation, work schedule, job stability and/or size of work place; 8. Includes support from employer or colleagues and/or workplace reaction to injury or claim; 9. Includes physical demands, psychological demands and/or control over work; 10. Includes current compensation, past compensation and/or litigation.

Appendice E: Characteristics of the included prognostic studies

Appendix E: Characteristics of the included prognostic studies

STUDY	N (at f-u[†])	SAMPLE (Inclusion/exclusion criteria)	FOLLOW-UP	STAT ANALYSIS	INDEPENDENT VARIABLES (source of data[§])	OUTCOME	SIGNIFICANT PREDICTORS
Abenhaim et al., 1988 (66) (Canada)	2342	Compensated workers for occupational back injury (cervical, thoracic, lumbar, sacral) (CSST) Being compensated for back problem in 1981 Not necessarily first lifetime episode (absences separated by 1 day of work = separate episodes)	3 years	Poisson regression	(CD, MR) *Sociodemographic* (Age; gender) Site of symptoms (cervical, thoracic, lumbar, unspecified) Type of occupation	Recurrence of compensation for back pain	<u>Higher risk of recurrence predicted by</u>: gender (male), age 45-65 (lower risk), thoracic symptoms (lower risk), occupation (nurses and drivers) * Recurrence = at least one recurrence in last 3 years
Abenhaim et al., 1995 (67) (Canada)	1848 (1720)	Compensated workers for occupational back injury (thoracic, lumbar, sacral) 15 – 65 Compensated in 1988 (at least one compensated day of work absence) Not compensated in previous 2 years	2 years	Logistic regression	(CD, MR) *Sociodemographic* (age; gender; occupation; place of residence; company size; daily amount of compensation) *Diagnosis* (non-specific: back pain, strain, sprain, unspecified back ailment) (specific: lesion of vertebrae and disc, sciatica, nonmechanical lesion of the spine like neoplasm or inflammation)	Chronicity (accumulation of 180 days or more of compensated absence from work)	<u>Chronicity predicted by</u>: receiving a specific diagnosis within 7 days, age (older, 55–64 vs 15–24), gender (female), daily compensation (higher)
Atlas et al., 2000 (68) (USA)	440 (326 at 4 years) (135/199 comp. & 191/241 non- comp)	Patient with sciatica due to lumbar disc herniation diagnosed by physician between 08/1990 – 06/1992 Sciatica = radiation down the posterior aspect of lower limb to a distal level of the knee Compensated (employed or not) or not Operative or non-operative management <u>Exclusion</u> Previous operation to lumbar spine; cauda equine syndrome; developmental spinal deformity; vertebral fracture; spinal infection or tumor; inflammatory spondylopathy; pregnancy; severe comorbid condition	(3, 6, 12, 24, 36) 48 months	Logistic regression	(Q, I, PE) *Demographic* (age; gender; education; smoking; litigation; work status in last 4 weeks; treatment: operative or non operative; compensation status) *Work factors* (type of work – labourer/professional, managerial/sales, services; physical demands; stressful work ; job satisfaction) *Physical examination* (straight leg raising; number of abnormal physical finding; imaging findings) *History* (previous episode of back pain; change in job due to back pain; comorbid illness) *Symptoms* (duration of current episode > 6 months; unilateral pain in lower limb; low back pain intensity score; sciatica frequency score; sciatica bothersome score) Functional status (RMDQ; SF-36)	Disability compensation status work status	<u>Compensation status at 4 years predicted by</u>: compensation at baseline, symptoms > 6 months, education (not graduated from college), comorbid conditions, litigation RTW at 4 years predicted by: age (younger), better perception of general health, less severe low back pain

Boersma & Linton, 2006 (69) (Sweden)	141	Patients consulting in primary care Non-specific back or neck pain of less than 12 months Employed 20-60 Less than 4 months of sickleave in last year because of MSP No physical therapy last year Exclusion: Red flags (e.g. disc disease) Lack of fluency in swedish	12 months	Hierarchical regression	(Q) *Sociodemographic* (age, gender) Pain intensity (past week and past 3 months) Pain frequency Expectation about persistent pain Pain discomfort (negative affect) Fear-avoidance (somatic focus, activity avoidance)	Pain intensity Functional disability (RMDQ)	Higher pain intensity predicted by: age (controlled for, not significant), higher pain intensity (controlled for, significant), more negative affect, more activity avoidance (fear-avoidance beliefs), expectancy of persistent pain Higher functional disability predicted by: more negative affect, more activity avoidance (fear-avoidance beliefs), expectancy of persistent pain *controlled for age, gender & average pain last 3 months
Borg et al., 2004 (70) (Sweden)	213	Subjects living in municipality of Linköping and were in 1985: 25 to 34 New sick-leave spell ≥ 28 days due to neck, shoulder or back problem (displacement of intervetebral lumbar disc, lumbago, sciatica, other deformities, humeroscapular periarthritis, myalgia, cervicalgia, cervicobrachialgia, tendovaginitis) Exclusion: Diagnoses differing in terms of aetiology and seldom leading to disability such as: arthrosis, rheumatism, inflammatory disorders. Pregnancy.	11 years	Cox proportional hazard	(CD) Gender Citizenship Length of sick leave episode – combined of actual)	Disability pension	Disability pension predicted by: having a sick leave spell ≥ 90 days during previous 2 years, gender (women), foreign citizen
Bot et al., 2005a (71) (Nether-lands)	181 (158 at three months; 152 at 12 months)	Patients consulting general practitioners (GP) for new episode of elbow symptoms (primary or secondary complaint) in 2001 New episode (no consultation previous 3 months for same symptoms) 18 or older	3, 12 months	Multiple regression (significance set at p<0.10)	(Q) *Sociodemograhic* (age; gender; BMI; right/left handedness; marital status; having children in household[B]; smoking; education; employment status) *Symptoms characteristics* (duration of current episode[A]; pain intensity[A]; functional disability; perceived cause of symptoms (overload usual activities, overload unusual activities, overload sports, accident during sports, accident elsewhere[A], anxiety[A], chronic disease[A], other cause) ; history of elbow symptoms; frequency of discomfort; signs (e.g. tingling, numbness, loss of strength[B], loss of hand coordination, tendency to shake hands, tendency to massage hands) ; involvement in one or both elbow[A]; complaint at the dominant arm; localized or generalized symptoms; pain	Change in pain intensity[A]	Lower change in pain intensity at 3 months predicted by: gender (female), age (older), longer duration of symptoms at baseline, multiple musculoskeletal symptoms, using more retreating (coping), less social support Higher change in pain intensity at 3 months predicted by: more intense pain at baseline, complaint in dominant arm, higher fear-avoidance

		Exclusion: Symptoms possibly caused by a fracture, malignancy, prosthesis, amputation or congenital defect or pregnancy			medication) *Comorbidity* (none, additional musculoskeletal symptoms: hip/knee[A], ankle/feet[A], back[A], multiple symptoms[A]; diseases other than musculoskeletal) *Physical activity* (healthy activity: at least 30 minutes 5 times/week[B]; ACSM norms of heavy physical activity at least 3 times/week) *Psychological factors and social support* (distress; coping : pain transformation, distraction, reducing demands, retreating, worrying, resting; kinesiophobia; social support) *General health* (vitality; perceived general health; perceived quality of life)	Change in functional disability[B]	Lower change in pain intensity at 12 months predicted by: less pain at baseline, longer duration of symptoms at baseline, history of elbow symptoms in past, tendency to massage hands, multiple musculoskeletal symptoms, using more retreating and worrying (coping) Lower change in functional disability at 3 months predicted by: having children in household, more intense pain at baseline, longer duration of symptoms at baseline, multiple musculoskeletal symptoms, using more retreating (coping), less social support Higher change in functional disability at 3 months predicted by: being employed, more disabled at baseline, accident as presumed cause Lower change in functional disability at 12 months predicted by: less disabled at baseline, longer duration of symptoms at baseline, additional symptoms at hip/knee, using more retreating and worrying (coping), more intense pain at baseline (p=.10), chronic disease as presumed cause (p=.08)
Bot et al., 2005b (72) (Nether-lands)	443 (399 at 3 months; 364 at 12 months)	Patients consulting GP for new episode of neck or shoulder symptoms New episode = no consultation previous 3 months for same symptoms 18 or older 06/2001 – 06/2002 Exclusion: Symptoms possibly caused by a fracture, malignancy, prosthesis, amputation or congenital defect or pregnancy	3, 12 months	Cox regression, linear regression (significance set at p<0.10)	(Q) *Sociodemograhic* (age; gender; BMI; right/left handedness; marital status; having children in household; smoking; education; employment status) *Symptoms characteristics* (pain intensity; functional disability; duration of current episode; perceived cause of symptoms (overload usual activities, overload unusual activities, overload sports, accident during sports, accident elsewhere, anxiety, chronic disease, other); history of neck/shoulder symptoms; frequency of discomfort; signs (e.g. tingling, numbness, loss of strength, loss of hand coordination, tendency to shake hands, tendency to massage hands); headache; concentration problems; involvement in one or both shoulder; involvement in dominant shoulder; localized or generalized symptoms; pain medication) *Comorbidity* (none, additional musculoskeletal symptoms: hip/knee, ankle/feet, back, multiple symptoms; diseases other than musculoskeletal) *Physical activity* (healthy activity: at least 30 minutes 5 times/week; ACSM norms of heavy physical activity at least 3 times/week) *Psychological factors and social support* (distress; coping; kinesiophobia; social support) *General health* (vitality; perceived general health; perceived quality of life)	Perceived recovery (yes/no) Change in pain intensity	Lower perceived recovery at 3 months predicted by: history of neck or shoulder problems, frequent discomfort, lower vitality (general health), more intense pain at baseline (p=.08), longer duration of symptoms at baseline (p=.08), using more resting (coping) (p=.07) Lower perceived recovery at 12 months predicted by: longer duration of symptoms at baseline, history of neck/shoulder problems, symptoms in both shoulders, multiple musculoskeletal symptoms, using more worrying (coping) (p=.07), numb hand/fingers (p=.07) Lower Change in pain intensity at 3 months predicted by: less intense pain at baseline, longer duration of symptoms at baseline, frequent discomfort, hip or knee symptoms, multiple musculoskeletal symptoms, less fear-avoidance, less vitality (general health), history of neck/shoulder

							problems (p=.08), tingling in hand/fingers (p=.07) <u>Lower Change in pain intensity at 12 months predicted by</u>: less intense pain at baseline, longer duration of symptoms at baseline, history of neck/shoulder problems, symptoms in both shoulders, using more worrying (coping), worse perceived health, bad or moderate quality of life, tingling in hand/fingers (p=.09), less fear-avoidance (p=.07)
						Change in functional disability	<u>Lower change in functional disability at 3 months predicted by</u>: age (older), less disabled at baseline, longer duration of symptoms at baseline, frequent discomfort, perceived cause – chronic disease, tingling in hand/fingers, loss of strength, hip or knee symptoms, - using more distraction (coping), less fear-avoidance, less vitality (general health), generalized symptoms (p=.08) <u>Lower change in functional disability at 12 months predicted by</u>: age (older), less disabled at baseline, longer duration of symptoms at baseline, numb hand/fingers, hip or knee symptoms, multiple musculoskeletal symptoms, bad or moderate quality of life, less vitality (general health), not having tendency to massage hands, loss of strength (p=.09), using more worrying (coping) (p=.09)
Burton et al., 1997 (73) (United-Kingdom)	70 (NR)	One or more chronic work-related upper extremity disorder referred by physician to a multidisciplinary functional restoration program 01/1994 – 05/1995 > 4 months since work injury Acute conservative care failed or judged unnecessary Surgery did not produce resolution or was not an option Severe functional limitations remained	1 year after discharge	Logistic regression	(Q, I,) *Demographic* (age, gender, education, marital status, race, surgery, number of surgeries, length of symptoms, length of disability, length of pre-injury work) *Psychopathology* (number of disorders, major depression, substance abuse, anxiety) Childhood abuse (sexual, physical) Personality disorder Depression Perceived disability Perceived pain Location and pain intensity (pain drawing)	RTW status	<u>No RTW predicted by</u>: age (older), race (Caucasian), current anxiety disorder, deterioration of perception of disability (pre-post program)
Burton & Tillotson, 1991 (74) (United-	109 (98 at 1 month; 88 at 3 months; 89	Sequential LBP patients attending orthopaedic out-patient department and private practice (clinic)	1, 3, 12 months	Discriminant analysis	(Q, PE) *Demographic* (age; history of previous LBP; frequency of previous LBP; age of first onset of LBP; type of onset (current spell) – sudden/ gradual; length of current spell; off work (this spell); type of occupation; previous	Improving (steadily improving/ symptom free)	<u>Improvement (I) /no improvement(NI) at 1 month predicted by</u>: type of onset (sudden) (I), - frequency of previous LBP (frequent or persisting) (NI), length of current spell (longer)

Kingdom)	at 12 months)	Primary complaint of back and/or lower limb pain <u>Exclusion</u>: Inflammatory, neoplastic and metabolic disorders			treatment (current spell); sports activity in school years/adult years) *Clinical examination* (passive resisted hip flexion, passive flexion both knees, objective sensory/motor change in legs, straight leg raising ≤ 50˚, nerve root tension, sit up from supine, passive flexion/adduction of hip, traction vial lower extremity, trunk list (standing), inappropriate illness behaviour, lumbar flexion/extension/range of movement) *Symptoms* (site of symptoms, pain drawing, constancy of symptoms, variability of symptoms severity, symptoms modifying factors: aggravated by rest- relieved by activity or vice-versa)	or not improving (worse/ fluctuating)	(NI), sport activity in adult years (NI), trunk list (standing) (I), sit up from supine (painful or unable) (NI), inappropriate illness behaviours (NI), traction vial lower extremity (no relief) (I), site of symptoms (lower with/without back pain VS back pain) (NI), lumbar flexion (more) (I) <u>Improvement/no improvement at 3 months predicted by (direction not specified)</u>: length of current spell (longer), off work, type of job (higher exertion), previous treatment current spell, sport activity in school years, trunk list (standing), straight leg raising, nerve root tension, sit up from supine (painful or unable), objective sensory/motor change in legs, constancy of symptoms <u>Improvement at 12 months predicted by</u> <u>(direction not specified)</u>: frequency of previous LBP - (frequent or persisting), type of job (higher exertion), previous treatment current spell, straight leg raising , traction vial lower extremity (no relief), site of symptoms (lower with/without back pain VS back pain), constancy of symptoms, lumbar extension (more)
Burton et al., 1995 (75) (United-Kingdom)	252 (186 at follow up)	New occurrence of back pain Consecutive patients attending osteopaths (clinic) Acute < 3 weeks; subacute > 3 weeks, <52 weeks; chronic <52 weeks <u>Exclusion</u>: Serious pathology (e.g. organic or neoplastic disease)	12 months	Stepwise multiple regression, discriminant analysis	(I, PE, Q) *Clinical interview* (age; gender; history back pain; number previous spells; time off work last year; duration of current back pain) *Physical examination* (straight leg raise; lumbar flexion; presence of leg pain; root tension; trunk list; pain behaviour; ; sit up; pain at best; pain at worst) Pain intensity Pain locus of control Fear-avoidance beliefs Pain coping strategies Depression Somatic perception Disability Other treatments sought (at follow-up)	Disability (RMDQ)	<u>Disability for all patients predicted by</u>: coping strategies (paying/hoping), present pain intensity, somatic perception, straight leg raise, root tension signs <u>Disability for acute patients (N = 56) predicted by</u>: coping strategies (catastrophizing), somatic perceptions, straight leg raise, coping strategies (praying/hoping), leg pain <u>Disability for subchronic patients (N = 59) predicted by</u>: initial disability, present pain intensity
Busch et al., 2007 (76) (Sweden)	233	Subjects on long term sickness absence (12 to 18 months) for non-specific musculoskeletal disorders with or without radiation (back pain, shoulder/neck, widespread, other) Recruited from National Social Insurance board database	12 months	Logistic regression	(Q) *Sociodemographics* (age; education; occupation; economic strain; past long term sickness absence) *Work characteristics* (physical demands; mental and social demands; appraisal of work & work commitment) Psychological morbidity (general health) Mastery (belief about self-control over life events, in capacity to solve problems, in ability influence future) Recovery beliefs	Long term sickness absence (sick absent (>90 days vs work capable (<90 days)	<u>Long term sick absenteeism (>90 days) predicted by</u>: low expectation of recovery, low sense of mastery, high mental demands, past long term sick leave *controlled for age, gender, education, occupation & economic situation

		Some work capable, some sick absent Under 60 <u>Exclusion</u>: Underlying pathologies : tumours, fractures, infections, inflammatory disorders, subjects with small chance of RTW for non-medical reasons, unemployed before sickness absence					
Carey et al., 2000 (77) (USA)	96 from a cohort of 1246	Consecutive patients from primary care physicians and chiropractors 18 or older LBP < 10 weeks No functional recovery at the 12 week interview Previous episode allowed No previous care for current episode No spine previous surgery No history of nonskin malignancy Not pregnant Speak English	2, 4, 8, 12 and 24 weeks, 22 months	Logistic regression	(Q, I) *Sociodemographic* (age; gender; race; income; duration of LBP; previous episode of LBP; sciatica; compensation; medication used; employment status) Pain intensity Care received Satisfaction with care Functional status (RMDQ, SF-36)	Remitting and unremitting LBP (disabled at all interviews) (RMDQ)	<u>Chronic LBP at 3, 6, 22 months predicted by</u>: poor functional status, baseline sciatica (radiation to knee or below)
Cats-Baril & Frymoyer, 1991 (78) (USA)	250 (232 at 6 month follow-up)	Patients in 2 back clinics suffering from a new LBP episode, Unemployed for 3 months or less, 18 to 65	3, 6 months	Discriminant function	(Q 1 questionnaire only based on panel of experts) *Sociodemographic* (age; education; alcohol use; level of fitness; lawyer involvement; work status) *Medical factors* (physical findings; compensable injury; perception of fault; pain intensity; inappropriate pain; disability history; sciatica; pain syndromes – presence or history; acute/gradual onset; past hospitalization) *Psychosocial variables* (psychological symptoms; coping; personality type; daily hassle; major life events) *Work variables* (job requirement; occupation – physically or mentally demanding; job satisfaction; self-employment; work history - stability; proximity of retirement; satisfaction with retirement plan)	Work status (working vs disabled)	<u>Employment status at 6 months predicted by</u>: Job characteristics (work status at baseline, work history, occupation, job satisfaction, satisfaction with retirements policies and benefits), perception whether injury was a source of compensation, who was at fault and if lawyer was contacted, past hospitalizations, educational level
Cherkin et al., 1996 (79) (USA)	219 (209 at 7 weeks; 207 at 1 year)	Primary care clinic patients (GP) recruited between 06/1992 – 07/1993 First visit for LBP 20-69 <u>Exclusion</u>: Previous surgery, systemic/ visceral disease (e.g.	7 weeks, 1 year	Logistic regression	(Q) *Sociodemographic* (age; gender; education; race; marital status) *Employment* (employment status, physical demand of job, satisfaction with job, compensation status) *General health* (general health perception, depression, smoking status) *LBP history* (previous history of back pain; previous visits for back pain; disability - chronic pain grade) *Characteristics of current episode of LBP* (duration or current episode; radiation below knee; symptoms present most of last 24h; bothersomeness	Symptom satisfaction (good or poor outcome)	<u>Poor outcome at 7 weeks are</u>: depression, pain below the knee, age (younger), lower satisfaction with work (in analysis restricted to working subjects) <u>Poor outcome at 1 year are</u>: depression, pain below the knee

		infection), osteoporosis/ cortisosteroid therapy, pregnancy, cancer, unexplained weight loss, vertebral fracture or dislocation, progressive or severe neurologic signs, permanent disability, litigation, severe/ disabling coexisting problem			last 24h and duration of symptoms; worry last 24 h; disability last 24h (RMDQ))		
Cole et al., 2002 (80) (Canada)	1566 (1332 with complete data)	Subjects off work with soft-tissue injury (back, upper & lower extremity) New lost-time compensation claim from 05/1993 – 11/1993 Off work at time of interview (3 weeks after injury)	4, 16, 52 weeks	Cox proportional hazard	(Q) *Recovery expectations* (injury better/worse than expectation; expected change in condition; expected time until return to usual activities; expected return to usual job) *Confounders*: *Sociodemographic* (age; gender; marital status; education; income) *Work-related variables* (industry sector; job heaviness; possibility of workplace accommodation) *Clinical variables* (serious coexisting condition; recurrence; pain intensity; functional status by body area; health quality of life)	Time receiving benefits Pain intensity Functional status	After controlling for other confounders (clinical, demographic, work related: Longer time receiving benefits at 52 weeks predicted by: Expectations of slower recovery (progress worse than expected ; longer expected return to usual activities; negative expectations about change in condition) Reduction in pain intensity at 52 weeks predicted by: positive recovery expectations (expects to return to usual activities within 3 weeks; progress much better than expected; expects to get better soon) Improved functional status at 52 weeks predicted by: - positive recovery expectation (progress much better than expected; expects to return to usual job)
Coste et al., 1994 (81) (France)	103 (92 at 90 days)	Self referring to GP (primary care) between 06/01/1991 – 11/07/1991 Non specific back pain less than 72 hours Pain without radiation below gluteal fold 18 or over French speaking (Mix of working/not working at entry) Exclusion: Back pain in previous 3 months Malignancies, infections, spondylarthropathies, vertebal fractures, neurological signs	(8, 15, 30, 60) 90 days	Kaplan-Meier, Proportional hazard	(Q, PE) *Sociodemographic factors* (age; gender; employment status at baseline; Compensation status) *Occupational characteristics* (satisfaction, manual work, job difficulty – heavy labor) *Medical & surgical history* (previous acute episode; previous chronic (> 3 months) episode; prior back surgery; duration of current episode; sudden/gradual onset) *Pain and disability* (pain intensity; constant pain at night; pain aggravated by impulsion; pain aggravated by moving back; pain worse on standing; pain worse on lying; unable to stand even briefly; disability) *Physical findings* (limited passive movement; catch; straight leg raising < 75°) *Psychiatric symptoms* (DSM-III-R diagnosis : depression, generalized anxiety)	Recovery (disappearance of Pain and disability (RMDQ)) Time to return to work (for those returning)	Lower probability of Recovery at 90 days predicted by: previous chronic low back pain, pain worse when standing/lying, disability at baseline, compensation, employment status at baseline lost work time at 90 days predicted by : previous chronic low back pain, pain worse when standing/lying, disability at baseline, compensation status, gender (male), poor job satisfaction *adjusted for pain duration at entry

Crook et al., 1998 (82) (Canada)	148	Compensated injury workers with musculoskeletal injuries (soft tissue trauma) of any body region Work absence of 91-97 days Understand English Under 60 <u>Exclusion</u>: Trauma caused by burns, fractures, dislocations, amputations, surgery, toxic/metabolic/neoplastic disorders, brain and spinal cord injuries, injuries to respiratory/gastrointestinal/cardiovascular/genitourinary systems, other organs/visceral ailments	9, 15, 21 months	Cox proportional hazard regression	(Q) *Pre-injury variables* (age; gender; usual work activity: sitting, standing, climbing, carrying light or heavy loads, twisting, bending, stooping ; work environment/stressors: sum of continuous noise, monotonous activity, vibration, social isolation, shift work, coworker relationship, boss performance pressures, piecework, overtime; accident impact score: loss of consciousness inability to move, immediate pain, reveiving immediate medical attention, taken to emergency room, hospitalization; body site symptomatic) Pain intensity Pain behaviour Physical impairment Psychological distress *Functional disability* (personal care, dexterity, locomotion, body disposition) *Relational disability* (family role disability, occupational role disability, social/ recreational disability) *Handicap variables* (mobility; occupation; physical independence; social integration; economic self-sufficiency) Availability of modified work	Number of days to first RTW	<u>Longer RTW at 21 months predicted by (baseline fixed variables)</u>: Age (older), gender (women), more distress (positive symptom distress), functional disability <u>Longer RTW at 21 months predicted by (with modified job)</u>: age (older), gender (women), modified job available, functional disability *Controling for age and sex
Deyo et al., 1988 (83) (USA)	203 (179 at 3 months)	Patients consulting at outpatient clinic of hospital for LBP between 03/1982 – 08/1984 Uncomplicated mechanical back pain 18 or older Any duration of pain (most less than one month) * mixed working or not <u>Exclusion</u>: Primary infection, neoplastic or inflammatory cause, neurologic impairment, pregnancy, receiving steroids or anticoagulants, seeking disability compensation, pain above T12, alcohol or drug abuse, history of malignancy, motor neurologic deficits, temperature ≥ 37.8°c, rectal bleeding, disabling comorbidity, urinary tract disease	3 months	Linear regression, discriminant analysis	(Q, I, PE) *Demographic* (age; education; employment status; English or Spanish language) *Medical history* (duration of episode; number of previous episodes; previous back surgery; first time to consult for back pain; self-rated severity; insidious onset; sciatica-like pain) *Physical examination* (forward flexion; straight leg raising; appears in severe pain; obesity) *Functional and psychosocial variables* (general health status; physical health status; psychosocial health status; feel sick all the time; worried about serious illness; work demands)	Pain improvement Days of pain duration Improvement in functional ability (SIP) Use of medical services (physician visits) Employment status Seeking compensation	<u>Pain improvement predicted by</u>: lower number of previous episodes, not always feeling sick, more years of education <u>Longer duration of pain predicted</u> by: always feeling sick, higher number of previous episodes, more physical dysfunction <u>Functional improvement predicted by</u>: higher overall dysfunction at baseline, does not appear in severe pain, not always feeling sick, language used (English vs Spanish) <u>More use of medical services predicted by</u>: not first time to see MD, always feeling sick <u>Employment status predicted by</u>: - employment status at entry <u>Seeking compensation predicted by</u>: less years of education, always feeling sick, not first time to see MD
Dionne et al., 2007 (84)	1007 (6 weeks : 923; 12 weeks :	Workers consulting in primary care for back pain (06/1999 – 09/2000) not necessarily for the first time	6 & 12 weeks, 1 & 2 years	Polytomous logistic regression	(I, MI) *Sociodemographic* (age; education; ethnicity; income; living with spouse; number of children under 5; number of household members; chores responsibilities; maternal language)	RTW in good health – including work status,	<u>Failure at 2 years for women predicted by</u>: persistent pain, pain radiation to arm or leg, increasing job seniority, not unionized, feeling clinician listened carefully, increasing fear-

	907; 12 months : 913; 24 months : 864)	Any duration 18-64 Absent from work ≥ 1 day <u>Exclusion</u>: Other condition that can affect work capacity (pregnancy, serious comorbidity), pain limited to cervical spine, specific conditions (spinal tumors or infection, vertebral fractures, systemic disease, referred visceral pain, cauda equine)			*Health behaviour* (BMI; alcoholism; smoking; sports; meditation-relaxation; sleep quality) *Episode characteristics* (duration of current episode; duration of pain last 6 months; years since onset; type of episode: one time, recurrent, persistent; diagnoses; site of pain: cervico-thoracic, thoracic, thoraco-lumbar, lumbar, lumbosacral, multiple; radiation to arm or leg; reduction of life activities last 6 months; reduction work last 6 months) *History* (years since first back pain; previous compensation; number of previous back surgeries; number of previous sick-leave; number days of work or modified duties last 12 months) *Work characteristics* (job status: permanent/occasional or seasonal/self-employed; work status: regular job, modified duties, off-work; schedule: full time, part time; current compensation; declared professional lesion; union; seniority; company size; workload index: sitting, standing, trunk flexion, trunk rotation, lifting, vibrations, manipulation of charges, efforts with tools, lifting of persons, physical strenght; effort-reward imbalance – occupation below qualification; psychological demands & decision latitude; pace; job satisfaction; social support at work; supervisor takes back pain seriously; possibility of accommodation; expectation of losing job next 2 years) *Psychological factors* (depression; somatization self-efficacy for work capacity; coping; Health locus of control; exposure to stressful events past 12 months; fear-avoidance-activity, work; social support; trauma before the age of 18; pain control strategies) *Pain intensity* (current, worst in last 6 months, average last 6 months) Functional limitation (RMDQ) Self-reported health status Dramatization of diagnosis (by professional) *Health services utilization* (number of visits to clinic last 12 months; number of hospitalizations last 12 months; perception of correctness of diagnosis; satisfaction with health services; characteristics of patient-physician encounter)	functional limitations, number of lost days (failure, failure after success partial success)	avoidance beliefs toward work and activities <u>Failure at 2 years for men predicted by</u>: decreasing age, smoking, poor self-reported health status, pain in thoracic area, previous back surgeries, non compensated injuries, high pain levels, beliefs that job is below qualification, expectation to loose job, job status (modified duties), satisfaction with health services, increasing fear-avoidance beliefs toward work <u>Failure after attempt at 2 years for women predicted by (not reported in this review)</u>: increasing age, persistent pain, high pain levels, at least 1 day of sick-leave without medical certificate showed less failure, higher frequency of efforts using tools, feeling clinician listened carefully, increasing fear-avoidance beliefs toward activities, decreasing self-efficacy <u>Failure after attempt at 2 years for men predicted by (not reported in this review)</u>: persistent pain, beliefs that job is below qualification, expectation to loose job, less trust in accuracy of doctor evaluation, higher self-efficacy showed less failure <u>Partial success at 2 years for women predicted by (not reported in this review)</u>: increasing age, recurrent or persistent pain, radiation to arm/leg, higher functional limitation, higher social support at work, feeling clinician listened carefully, not being totally satisfied with health care, increasing fear-avoidance beliefs toward activities <u>Partial success at 2 years for men predicted by (not reported in this review)</u>: current financial problems had less partial success, fair or poor self-reported health status, recurrent or persistent pain, previous back surgeries, higher functional limitation, higher work load, higher working pace showed less partial success, higher relief of concerned about cause of back pain by Dr., received less teaching on how to work, more depression symptoms
Dionne et al., 1995 (85) (Canada)	1213 (1009)	Consecutive patients consulting primary care physician for back pain (including thoracic and	1 & 2 years	Multiple regression	(I, Q, MR) *Sociodemographic* (age; gender; income; marital status; race; height; weight; obesity; BMI; smoking status; compensation (current, past); living arrangement; number of children; responsibility for house keeping)	Disability (RMDQ)	<u>Higher disability (continued disability) at 2 years predicted by</u>: - education (lower)

		cervical pain) in HMO between 1989-1990 18-75			*Clinical risk factors* (injury diagnosis; leg pain; sciatica; years since onset of back problems (duration); self-reported type of episode: one time, recurrent, persistent; number of previous back surgeries; patient's expectation of continued pain; stress from family pressures last 6 months; depression; somatization; alcoholism; control over pain; group of diagnosis; associated conditions – arthritis, depression, degenerative joint disease, hypertension, migraine, scoliosis, sciatica, etc.) *Job factors* (occupational category; physical demands – balancing, crawling, crouching, fingering, handling, kneeling, reaching, stooping, strength; retirement status) *Utilization data* (confidence in physician diagnosis; number of associated conditions; number of medical visits last 12 months; number of recommended bed rest days; referral to physical therapist; referral to specialist)		relationship moderated by: occupational category, patient's expectation of continued pain, somatization (higher), past compensation
Dionne et al., 1997 (86) (Canada)	1213 (1024 at 2 years)	Consecutive primary care back pain patient (including thoracic and cervical pain) in HMO between 1989-1990 18-75 Exclusion : Back pain due to abscess, neoplasm, pregnancy or alignment problems (kyphosis, scoliosis, lordosis)	2 years	Stepwise linear regression	(I, Q, MR, CD) *Demographic* (age; gender, education, income, race; marital status; BMI, height) *Job factors* (employment status; part/full time; physical demands; responsibility for housekeeping; years employed at current job) *Psychosocial factors* (catastrophizing; subjective health status; stress from family pressure; depression; somatization) Injury factors (compensation current, past, never; self-reported injury diagnosis) *Diagnostic factors* (depression; obesity; migraine; baseline composite disability score; grouped chronic pain score; number of associated diagnosis; number of pain complaints; pain intensity) *Medical history* (years since onset (duration); average pain intensity last 6 months; characteristic pain level; chest pain in last 6 months; how recently patient experienced pain; number of days with pain last 6 months; number of hours/day with pain; number of surgeries for back pain; number of medical visits last 12 months; number of pain disability days last 6 months; type of episode: one-time, recurrent, persistent; subject ever kept from fulltime work because pain; worst intensity of pain in last 6 months)	Disability (RMDQ)	Higher disability predicted by: higher depression, higher somatization, higher disability (baseline), higher number of pain days in past 6 months
Dozois et al., 1995 (87) (Canada)	161 (117 at follow-up)	Consecutive 256 LBP patients at a work hardening rehabilitation program center	mean of 11 weeks (After program), and 9 months	Discriminant function analysis	(Q) *Demographic* (age; gender; marital status; education; years from onset of injury to treatment; type of injury -mechanical strain or impact; diagnosis) Pain intensity Disability (perceived) Disability (perceived) (work related) *Employability* (perceived chances of obtaining employment) Psychological distress (global distress, depression) Functional status (lifting) *Coping strategies* (cognitive coping & suppression; helplessness; diverting attention & praying)	RTW status	Employed males are predicted by : less physical limitations (perceived disability), lower psychological distress (depression & global distress), lower pain intensity Unemployed males are predicted by : higher coping - cognitive coping & suppression, higher coping - diverting attention & praying

Engel et al., 1996 (88) (USA)	1059 (986)	Consecutive primary care back pain patient (including thoracic and cervical pain) in HMO between 1989-1990 18-75 <u>Exclusion</u>: Back pain due to abscess, neoplasm, pregnancy or alignment problems (kyphosis, scoliosis, lordosis)	1 year	Logistic regression	(I, Q, MR, CD) *Sociodemographic* (age gender, education) Pain intensity & disability *Back pain persistence* (number of days in pain last 6 months) Depression *Compensation* (past, current, never) *Back pain diagnosis* (disc disorder/sciatica: herniated disc, sacroiliitis, stenosis, pinched nerve, radiating back pain, sciatica; arthritis: osteodegenerative, rheumatoid, disc degeneration, spondylosis, compression fracture; other: musculoskeletal, injury/trauma, psychogenic, other)	Health care cost (total and back pain specific)	<u>High total cost predicted by</u>: High pain disability, disc disorder/sciatica, increasing pain persistence, increasing depression (increasing) (not back pain specific cost) *adjusted for age, gender, education
Enthoven et al., 2006 (89) (Sweden)	148 (T1 = 141; T2 = 139)	Patient consulting in general practice (physio and chiro) for LBP or neck pain (03/1993-12/1994) Eligible to sickness absence compensation 18 – 60 <u>Exclusion</u>: Affected nerve root signs, osteopenia, or suspected infection, having another disease, having been involved in an accident less than 10 days previously, pregnancy; inability to understand Swedish	1 & 5 years	Logistic regression	(Q) *Sociodemographic* (age; gender; smoking; exercise level & frequency before; Work (job satisfaction; satisfaction with workplace) *Episode characteristics & history* (duration of episode; similar problems last 5 years; number of localization: LBP LBP-thoracic, neck); expectations with treatment) Pain intensity Pain frequency Pain medication Functional limitations Current sick leave General health Well-being	Disability (functional limitations) (Oswestry)	<u>Disability at 1 year predicted by</u>: longer duration of current episode, higher pain frequency <u>Disability at 5 years predicted by</u>: being a woman, lower exercise level, longer duration of current episode, higher pain frequency
Epping-Jordan et al., 1998 (90) (USA)	140 (78 at follow-up)	Patients in Naval Medical Center (closed health care system) 18 to 50 Men Back pain (thoracic vertebra 6 or below) Persistent pain for 8±2 weeks <u>Exclusion</u>: Prior episode or persistent for 1 month or more Medication affecting mood (e.g. antidepressant, anxiolytic) Prior back surgery Other medical illness or pain disorder present Back pain secondary to medical condition	6, 12 months	Hierarchical multiple regression	(I, Q) *Sociodemographics* (age; gender, ethnicity; income; education; marital status) Pain intensity Disability (pain interference with activity) Depressive symptoms	 Pain intensity Disability (SIP)	After controlling for baseline level of criterion variable: <u>From baseline to 6 months and baseline to 12 months, pain intensity predicted by:</u> no significant predictors except pain intensity at baseline, trend for baseline depression at baseline <u>From 6 months to 12 months (not reported in this review)</u> : pain intensity at 6 months, disability at 6 months <u>From baseline to 12 months, disability predicted by</u>: disability at baseline, ethnicity (minority) <u>From baseline to 6 months, disability predicted by:</u> disability (criterion variable) at baseline, trend for depression at baseline

						Distress (depression)	From 6 to 12 months (not reported in this review): disability at 6 months, depression at 6 months From baseline to 12 months, distress predicted by: depression at baseline, disability at baseline, ethnicity (minority) From baseline to 6 months, distress predicted by: depression at baseline From 6 to 12 months (not reported in this review): depression at 6 months, disability at 6 months, ethnicity (minority)
Ericsson et al., 2002 (91) (Sweden)	184	Long-term follow-up pain patient in tertiary care Sick leave ≤ 365 days Low back, neck, extremity pain or multiple site diffuse pain (majority of patient) Referred for compensation evaluation (referred from insurance system)	2.5 years	Logistic regression	(I, Q) *Sociodemographic* (age; gender; immigrant status; number of sick leave days) *Personality traits* (*distress*: somatic anxiety, muscular tension, psychasthenia, psychic anxiety, inhibition of aggression, socialization, guilt; a*ggressiveness /conformity*: social desirability, verbal aggression, indirect aggression, irritability; *Aversive*: detachment, suspicion; *impulsivity*: impulsiveness, monotony avoidance) Personality disorder Depression diagnosis Pain severity	Work disability status	Disability at follow-up predicted by: age (older), higher number of sick leave days at baseline, diagnosis of depression
Estlander et al., 1998 (92) (Finland)	452 (399 at 1 year; 383 at 2 years; 365 at both)	Workers in forest-industry enterprise surveyed between 1992/1993 to 1994/1995 Low back, neck and shoulder pain for at least 30 days in the previous 12 months Younger than 54	12 and 24 months	Logistic regression	(Q) *Socioemographic* (age; gender; BMI; weight) Somatic perception (distress) Depression, Self-efficacy beliefs Prediction of future ability to work Physical workload Perceived disability *Work characteristics* (able to influence matters concerning oneself; support from supervisor; relationship with colleagues; use of work skills; time pressure; difficulty in work situations)	Days of pain over 12 months (contracted, persistent) VS recovered	Persistent pain (>30 days) (vs recovered: < 30 days) at 12 months predicted by : somatic perception and depression significant only when entered in block with (not separately): subjective disability (higher), age Persistent pain (vs recovered) at 24 months predicted by : subjective disability (higher) & work characteristics (many problems) when modeled separately (not together) with age (older). If modeled together, age is the only significant variable With more strict criteria (recovered < 8 days) , higher subjective disability was the only predictor at 12 and 24 months
Faber et al., 2006 (93) (Holland)	103 (T1: 99; T2: 90)	Patient with new episode of LBP consulting GP or occupational health physician Employees on sickness absence due to non-specific LBP Duration of sickness absence	3, 6 months	Linear regression	(Q) *Sociodemographic* (age; gender; education; BMI; participation in sports) *Episode characteristics* (recurrent LBP: complaint more than 1 year before; radiating LBP; other musculoskeletal complaints) *Work characteristics* (number of working hours; shift job; job demands; job control; high demand/low control; presence of lifting; perceived physical effort; duration sickness absence before inclusion)	RTW Pain intensity last week	Shorter duration of sickness absence at 6 months predicted by: gender (male), having recurrent LBP (>1year before), less functional limitations Higher improvement in pain intensity at 6 months predicted by: gender (male), working at 3 months, age (younger 40-49), less fear of

		between 3 and 12 weeks First sickness absence for this episode of LBP Minimum 1 month free of LBP before this episode			Functional limitations Pain intensity Fear of movement HRQOL	Functional limitation Health related QOL	movement <u>Higher improvement in functional limitations at 6 months predicted by</u>: working at 3 months, age (younger 20-39), less fear of movement, sports in past year <u>Higher improvement in quality of life at 6 months predicted by</u>: working at 3 months, less fear of movement, sports in past year
Feleus et al., 2007 (94) (Nether-lands)	682 (total pop: 607; working pop: 449)	Patients consulting GP for new episode of neck, upper back, shoulder, upper arm, elbow, forearm, wrist or hand pain (09/2001 – 12/2002) 18-64 Not visited GP for same complaint in last 6 months <u>Exclusion</u>: Trauma, fracture, malignancy, amputation, prosthesis, congenital defect, systemic disorder, generalized neurological disorder	6 months	Logistic regression	(Q) *Sociodemographic* (age; gender; BMI; education: working status) *Episode characteristics* (duration; trauma to arm, neck,shoulder in the past; musculo comorbidity; non-musculo comorbidity; recurrent complaint; pain site; multiple region complaint; specific diagnosis) *Work variables* (full or part time job; less than 5 years in job; complaint work-related; sick leave past 6 months; work load: heavy, repetitive) *Psychosocial work factors* (quantitative demands; skills discretion; decision authority; job strain; supervisor support; coworker support; job insecurity) *Psychosocial factors* (somatization; distress; social support; catastrophizing; kinesiophobia; health locus of control) Severity last week (intensity) Functional limitations *Perceived general health* (physical, mental) Physical activities in leisure; sports participation; physical activity leisure: heavy, repetitive) GP prognosis	Non recovery (of complaints – persistent complaints)	<u>Non-recovery for total population predicted by</u>: older age, longer duration of complaint, recurrent complaint, musculo comorbidity, wrist or hand complaint (region), non specific diagnosis, low social support, high somatization, prognosis of GP <u>Non-recovery for working population predicted by (not reported in this review)</u>: longer duration of complaint, recurrent complaint, musculo comorbidity, non specific diagnosis, low social support, low supervisor support, medium somatization, prognosis of GP * adjusted for age & gender
Fishbain et al., 1997 (95) (USA)	188 (128 at follow-up)	Consecutive chronic pain patient at chronic pain center between 03/1991 & 03/1993 Candidate for employment 19 – 62 Main complaint is LBP > 6 months Not retired, housewife or student <u>Exclusion</u>: Not requiring surgery for LBP at admission Not candidate for employment (student, housewife, retired with social security, accepted for social security)	1, 3, 6, 12, 18, 24 & 30 months	Discriminant analysis, stepwise regression	(Q *elaborated for study) *Sociodemographic* (age; gender; education) Intent to return to preinjury work Preinjury job stress Job physical demands Job satisfaction Job appreciation Job stress complaints (job content, quantitative workload, job context, physiologic stressor, role conflict, employee conflicts, supervisory conflicts, dangerousness, job insecurity)	Employment status 1 month Final employment status at discharge (18 to 36 months) Mean employment status over all follow-up	<u>Employment at 1 month predicted</u> : Intent to return to preinjury work, education level, dangerousness of work (job complaint), stress level of job, physical demands, liking of the job, role conflict (job complaint) <u>Final employment predicted by</u>: Intent to return to preinjury work, education level, dangerousness of work (job complaint), age, stress level of job, gender <u>Mean employment status predicted by</u>: Intent to return to preinjury work, education level

Fransen et al., 2002 (96) (New-Zealand)	854	New cases of work-related back injury reported at compensation board between 05/1994 – 12/1995 Nurse/nurse's aid, heavy manual workers and drivers (higher than average jobs with proportion of chronic occupational back pain)	3 months	Logistic regression	(Q) *Sociodemographic* (gender; age; living arrangements: alone or cohabitation; education; smoking; history of back pain in previous 12 months; prior compensation claim; BMI; level of current pain in back and lower limb (leg); perceived physical fitness before back pain) Support at work (relationship) *Workplace characteristics* (available system for reporting & management of back-injured workers; system for identifying potentially harmful material/situations; response to reporting to compensation; availability of light duty; perceived amount of lifting; regularly manoeuvre extremely heavy items; time spent sitting; time spent walking; time spent driving; if driving, notice vibration) Job satisfaction Life events (last 12 months) Locus of control Disability *General health (GHQ)* (psychological distress: somatic symptoms, anxiety & insomnia, social dysfunction, severe depression)	Compensation status (claiming or not) (chronicity)	<u>Chronicity (claiming) predicted by</u>: Severe leg pain, body mass index (30+), disability (above minimal: moderate, severe or extremely severe disability), perceived general health (more psychological distress), unavailability of light duty, lifting about ¾ of day or more *Adjusted for age and gender
Gallagher et al., 1989 (97) (USA)	169 (150 at 6 months)	Patients at university LBP clinic (N=92) AND subjects who applied for social security disability compensation (N=77) between 01/1984 – 05/1985 Currently out of work Worked at least 3 months prior to latest unemployment period <u>Exclusion</u>: For clinic group only: More than one previous surgery for LBP Unemployment > 18 months prior to visit (social security group had more extensive surgical histories and longer periods of unemployment)	6 months	Logistic regression	(Q *items from existing questionnaires, I, PE) *Sociodemographic* (gender; age; education; income; length of current unemployment; compensation claimantl litigation; alcohol use; smoking history; medication) *Illness behaviour* (disease conviction; hypochondriasis; denial; affective inhibition; somatic vs psychological focus on illness) *Psychosocial factors* (health locus of control, perceived stress, social support, coping mechanism, psychiatric symptoms, clinician judgement about RTW potential, personality (MMPI)) *Work factors* (employment pattern, perception of capacity to change job, motivation to RTW; job satisfaction; motion and physical stress at work - sedentary/light/medium/ heavy work) *Medical history & Physical evaluation* (onset of back pain- back pain began at work; severity of back pain; daily physical activities; presence of scoliosis; trunk range of motion; straight leg raising; lower extremity strength, sensation & reflexes; trunk flexor-extensor strength; ability to lift weight)	RTW (working vs disabled)	<u>Disability predicted by</u> : Age (older), length of time off work (longer), ease of changing occupations (harder), ability to do activities (more), MMPI Hysteria (higher), health locus of control (more), age X ease of changing occupations (odds of RTW for subjects perceiving job change as easy are smaller for older people than younger), length of time off work X Hysteria, health locus of control X Hysteria * controlled for age
Gallagher et al., 1995 (98) (USA)	169 (159 at 6 months)	Patients at university LBP clinic (N=92) AND subjects who applied for social security disability compensation (N=77) between 01/1984 – 05/1985 Currently out of work Worked at least 3 months prior to latest unemployment	6 months	Logistic regression	(Q *items from existing questionnaires, I, PE) *Sociodemographic* (gender; age; education; income; length of current unemployment; compensation claimant; litigation; alcohol use; smoking history; medication) *Illness behaviour* (disease conviction; hypochondriasis; denial; affective inhibition; somatic vs psychological focus on illness) Health locus of control Perceived stress Social support	Receipt of compensation last 6 months	<u>Receipt of compensation predicted by</u>: Back pain began at work, group (clinic vs more chronic social security), spinal flexion (lesser angle), less capacity for daily activities, education (lower level), illness behavior :affective inhibition (higher), back pain began at work X education, affective inhibition X education (for subjects with affective inhibition, odds of receipt of compensation declines as educational level

		period <u>Exclusion</u>: For clinic group only: More than one previous surgery for LBP Unemployment > 18 months prior to visit (social security group had more extensive surgical histories and longer periods of unemployment)			Coping mechanism Psychiatric symptoms Clinician judgement about RTW potential Personality (MMPI) *Work factors* (employment pattern, perception of capacity to change job, motivation to RTW; job satisfaction; motion and physical stress at work - sedentary/light/medium/ heavy work) *Medical history & Physical evaluation* (onset of back pain- back pain began at work; severity of back pain; daily physical activities; presence of scoliosis; straight leg raising; lower extremity strength, sensation & reflexes; trunk range of motion; trunk flexor-extensor strength; ability to lift weight)	RTW	increases) *controlled for: Back pain began at work Compensation status (baseline or last 6 months) or litigation did not predict RTW beyond other variables (length of disability, ease of changing occupation, age, activity levels, health locus of control, MMPI hysteria) (predictors in Gallagher et al., 1989):
Gatchel et al., 1995a (99) (USA)	421 (394 at follow-up)	Patients seen in 3 clinics (1 occupational health and 2 orthopaedic practices) for back pain of less than 6 weeks <u>Exclusion</u>: Not working because of employment factors only	12 months	Stepwise logistic regression	(Q, I) *Sociodemographic* (age; gender; education; marital status; race; time since injury; compensation) *Medical history* (past back injury) Psychopathology (depression, anxiety, substance abuse disorders) Personality disorders *Personality characteristics* (MMPI scales 1, 2, 3) Pain & disability	RTW (Disabled/not disabled)	<u>Disability predicted by: (without MMPI0)</u>: higher pain and disability analogue score, gender (women), worker compensation insurance case <u>Disability predicted by (with MMPI, N=208)</u>: higher pain and disability analogue score, worker compensation insurance case, gender (women), MMPI Hysteria
Gatchel et al., 1995b (100) (USA)	324 (310 at follow-up)	Patients seen in 3 clinics (1 occupational health and 2 orthopaedic practices) for back pain of less than 6 weeks <u>Exclusion</u>: Not working because of employment factors only	6 months	Logistic regression	(Q, I) *Sociodemographic* (age; gender; ethnicity; marital status; education; occupation) Pain and disability analogue Psychopathology (depression, anxiety, substance abuse) Personality disorders Personality traits (MMPI scales L, K, 3)	RTW (working/ training OR disabled because of original back injury)	<u>Disabled are (without MMPI)</u>: age (older), more analogue pain level, non-caucasian, 1 or more personality disorder <u>Disabled are (with MMPI, N=172)</u> : more analogue pain level, 1or more personality disorder, MMPI scale 3 (hysteria)
Gauthier et al., 2006 (101) (Canada)	255	Claimants of workers compensation board referred to a secondary prevention program Off work at least 6 weeks for injury (soft tissue injury in occupational accident) Evidence of at least 1 yellow flag (e.g. emotional distress, pain as primary limiting factor to RTW)	14 weeks (4 weeks after 10 week program)	Hierarchical logistic regression	(Q) *Sociodemographic* (age; gender; duration of work absence; injury site) Pain catastrophizing Fear of movement Depression Pain severity Perceived disability	RTW (full time preinjury or alternate employment VS no RTW) Perceived disability	<u>RTW predicted by</u>: gender (female), duration of work absence, catastrophizing, pain severity <u>Perceived disability predicted by</u>: gender, perceived disability at baseline
Grooten et al., 2007a (102) (Sweden)	1044 (803 at follow-up)	Subjects with neck/shoulder at baseline (1994-1997) Employed (at least 17h/week)	5 to 6 years	Cox regression	(Q) *Biomechanical exposure* (manual handling; working with hands above shoulders; working with vibrating tools; sitting 75% of time) *Psychosocial exposure* (low demands vs competence; few opportunities to learn; high mental demands; low decision latitude; job strain: high mental demands, low latitude; poor support at work; low meaningfulness; high time pressure; high hindrances)	Symptoms recovery	Higher chance of symptoms recovery predicted by: - job strain - sitting ≥ 75% of time Lower chance of symptoms recovery predicted by:

					Organizational exposures (non-fixed salary; night/shift work; solitary work)		- exposed to 2 or 3 of biomechanical exposure (manual handling; working with hands above shoulders; working with vibrating tools) *adjusted for age & gender
Grooten, 2007b (103) (Sweden)	1471	Subjects with neck/shoulder at baseline (1994-1997) 20-59	5 to 6 years	Cox regression	(Q, CE, DB) *Symptoms & clinical signs*: Ongoing pain (pain or disability for neck, shoulder or neck & shoulder) Long lasting pain (> 7 consecutive days or > 3 consecutive months) Decreased ROM (neck : flexion; extension; rotation; shoulder: abduction, external or internal rotation: neck & shoulder) Radiating pain Traumatic onset Previous sought medical care for shoulder/neck pain Sickness absence previous 12 months Concomitant LBP Other illness (non-musculoskeletal physical disorders: cardiovascular, respiratory, gastrointestinal, urogenital, metabolic; psychosomatic including sleep related problem) *<u>Confounders</u>* (age; gender; smoking; physical activity during leisure)	Sickness absence	<u>Higher risk of sickness absence predicted by</u>: sickness absence previous year, previously sought care = lower sickness absence risk * adjusted for age & gender
Gross & Battié, 2006 (104) (Canada)	336	Claimants of workers compensation for upper extremity disorders (01/2000 – 03/2002) At least 6 weeks after accident <u>Exclusion</u>: Claimants with explicit physical restrictions (e.g. managed by stringent post-surgical protocol)	12 months	Cox PH, logistic regression	(DB, Clinical DB, Q, PE) *Functional capacity evaluation* (floor-to-waist lift; waist-to-overhead lift; horizontal lift; pushing; pulling; left/right hand carrying; front carrying; sustained elevated work; crawling; ladder climbing; right/left hand coordination; right/left grip strength) *<u>Confounders</u>* (gender; age; employment status; duration since injury; pain intensity; perceived disability; physical job demands; income; number of health care visits; number of previous claims; number of previous upper extremity claims; RTW recommendation)	Days until suspension of benefits Claim closure Recurrence (sustained recovery)	<u>Faster suspension of benefits predicted by</u>: higher waist-to-overhead lift (adjusted for significant confounder: *salary* & *pain intensity*) <u>Faster claim closure predicted by</u>: higher waist-to-overhead lift (adjusted for significant confounder: *salary* & *perceived disability*) <u>Recurrence predicted by</u>: No FCE significant after controlling for significant confounders (*age, gender, previous claims, salary*)- Only right hand grip was significant without confounders but for specific injuries only
Gross & Battié, 2005a (105) (Canada)	97 (NR)	Injured workers receiving time-loss benefits for low back injuries between 04/2001 – 03/2002 Duration of 6 weeks or more between injury and RTW assessment Exclusion of further medical	1 year	Cox proportional hazards regression, Logistic regression	(CD, I, Q, PE) *Work-related recovery expectation* (capable of returning to usual work; worsening of symptoms if return to usual work; injury will interferes with ability to do usual work in future) *<u>Confounders</u>*: *Sociodemographic* (age; gender; pre-injury income; work status at assessment) Diagnosis (non-specific; disc pathology; fracture/ dislocation)	Number of days of time-loss benefits & Number of days until claim closure Recurrence of	Negative expectations predict less suspension of time-loss benefit (longer time to RTW) and longer claim closures (beyond other confounders) Negative expectations were not significantly

		investigation or treatment recommended after RTW testing			*Medical factors* (duration of injury; number of previous back claim; floor-to-waist lifting from functional capacity evaluation; health care utilization before assessment; RTW recommendation by physician after assessment; occupational physical demands)	benefits in year after RTW	associated with higher risk of recurrence
Gross & Battié, 2005b (106) (Canada)	130	Claimants of workers compensation for back injury (01/2000 – 03/2002) At least 6 weeks after accident	12 months	Cox PH, logistic regression	(DB, Clinical DB, Q, PE) *Functional capacity evaluation* (floor-to-waist lift; waist-to-overhead lift; horizontal lift; pushing; pulling; left/right hand carrying; front carrying; sustained elevated work; crawling; ladder climbing; right/left hand coordination; right/left grip strength) <u>Confounders</u> (work related recovery expectations; perceived work place support/organizational policies and practices, injury duration)	Days until suspension of benefits Claim closure Recurrence (sustained recovery) Work status Pain intensity Disability	<u>Faster suspension of benefits predicted by</u>: higher waist-to-overhead lift, lower number of failed FCE task (minimal impact of confounders: i.e. work related recovery expectations, work place support/ organizational policies and practices) <u>Faster claim closure predicted by</u>: No FCE performance significant <u>Recurrence predicted by</u>: No FCE performance significant No FCE performance significant for work status, pain intensity & disability
Grotle et al., 2005 (107) (Norway)	123 (120 at f/u)	First time consulted primary care practitioner for LBP (2001-2003) Acute LBP (< 3 weeks) with or without radiation 18-60 No prior treatment for LBP <u>Exclusion</u>: Previous treatment for back episode, pregnancy, symptoms or signs of cauda equine, progressive paresis, fracture, suspected tumor, local infection, ankylosing, spondylitis, rheumatoid arthritis, other inflammatory disease	3 months	Logistic regression	(Q) *Sociodemographic* (age; gender; education; smoking; work status; job satisfaction) *Back pain history* (previous history LBP: comorbidity-other disease; type of onset–sudden/gradual; duration of episode; pain radiation; pain medication last 2 days and last month; sleeping/ relaxation medication) Pain intensity Disability daily activities (functional limitations) Number of disability days last month; Acute LBP questionnaire on sociodemo & psychosocial risk (low, medium, high risk) Fear-avoidance (work, activities) Distress last week *Clinical examination* (neurological signs – 2 or more positive tests: radiation to foot, SLR, ankle/patellar reflexes, sensory loss, weakness foot or thigh muscle) (lumbar mobility (finger-floor distance forward and side bending)	Non-recovery (functional limitations: RMDQ)	<u>Non-recovery at 3 months predicted by</u>: age (above 45), current smoking, 2 or more neurological signs, medium or high psychosocial LBP risk, high distress *adjusted for age and gender
Grotle et al., 2007 (108) (Norway)	123 (112 at f/u)	First time consulted primary care practitioner for LBP (2001-2003) Acute LBP (< 3 weeks) with or without radiation 18-60 No prior treatment for LBP	12 months	Logistic regression	(Q) *Sociodemographic* (age; gender; education; smoking; work status; job satisfaction) *Back pain history* (previous history LBP: comorbidity-other disease; type of onset–sudden/gradual; duration of episode; pain radiation; pain medication last 2 days and last month; sleeping/ relaxation medication) Pain intensity Disability daily activities (functional limitation)	Non-recovery (functional limitations: RMDQ)	<u>Non-recovery at 12 months predicted by</u>: high distress, high psychosocial risk LBP *adjusted for age and gender

		Exclusion: Previous treatment for back episode, pregnancy, symptoms or signs of cauda equine, progressive paresis, fracture, suspected tumor, local infection, ankylosing, spondylitis, rheumatoid arthritis, other inflammatory disease			Number of disability days last month; Acute LBP questionnaire on sociodemo & psychosocial risk (low, medium, high risk) Fear-avoidance(work, activities) Distress last week *Clinical examination* (neurological signs – 2 or more positive tests: radiation to foot, SLR, ankle/patellar reflexes, sensory loss, weakness foot or thigh muscle) (lumbar mobility: (finger-floor distance forward and side bending)		
Haldorsen et al., 1998 (109) (Norway)	260	Back pain (with or without radiation to leg) referred by national insurance offices between 08/1991 – 03/1993 On sick leave 8 to 12 weeks Compensated (clinics) <u>Exclusion</u>: Pregnant women > 12 weeks of sick leave	3, 6, 12 months	Discriminant analysis	(PE, Q) *Sociodemographic* (age; marital status; education; number of children; work conditions – workload, travel time; income; time of onset of pain; smoking; leisure time physical activity; quality of social support; length of pre-injury employment) *Back pain diagnosis* (lumbago or dorsalgia; LBP with radiation to extremity; structural changes) *Clinical physical examination* (reflexes; sensibility; mobility of spine; physical capacity; muscle strength; radiographs; tomographic scans) *Subjective health* (musculoskeletal pain; psychological problems; immunologic problems; stomach problems; respiratory problems) Subjective work ability Health locus of control Anxiety *Personality* (neuroticism-stability; extroversion-introversion)	Work status (working, not working)	<u>Non-return to work at 12 months predicted by</u>: low internal health locus of control, restricted lateral mobility(right and left), reduced work ability perxception for ordinary work, have undergone radiographs of the back several times before (higher number of x-rays), less physically actives, more children, been longer in one job
Hankin & Killian, 2004 (110) (USA)	46 (26 at 3 months)	Patients referred to evaluation at multidisciplinary pain management program (clinic) between 08/2001 – 05/2002 Chronic pain of non-malignant origin Over 18	3 months (or earlier at discharge from treatment)	Stepwise regression	(Q,) *Sociodemographic* (age; gender; marital status; presence of psychological diagnosis; employment status; pain location; pain duration) *Distress* (depression; anxiety; somatization) (pain patient profile) *Pain level* (best pain; worst pain) *Readiness to change* (Pain stages of change)	Functional status (pain disability index)	<u>Higher functional status at 3 months predicted by initial variables</u> : work status (working), contemplation (improvement in stages of change)
Härkäpää, 1992 (111) (Finland)	476 (NR)	Blue collar workers (finnish state railways & post and telecommunications establishment) with chronic or recurrent LBP for at least 2 years Currently in physically strenuous or moderately strenuous work and for at least 10 years LBP affected working or functional capacity and led to sick-leave in last 2 years (not severely disabled) At work or on temporary sick leave at baseline	Average of 4.5 years	Stepwise logistic regression	(Q, CD) *Sociodemographic* (age, gender, marital status; employment type: self-employed, wage earner) Subjective prognosis of working capacity Treatment group Job satisfaction Disability *Distress* (depression, free-floating anxiety, somatic anxiety) Health locus of control *Treatment effect* (changes in disability index) *Compliance with self-care instruction* (accomplishment of back exercises and frequency of exercises)	Early retirement (disability pension)	<u>Early retirement predicted by</u>: Older age, wage-earner (vs self-employed), free-floating anxiety, weaker belief in internal control over back pain, poorer accomplishment of back exercise (after control for age, gender, initial LBP disability, treatment group) poor subjective prognosis of working capacity (p=0.054) stronger belief in control by other (p=0.077) *controlled for age & gender

Härkäpää et al., 1991 (112) (Finland)	476 (459 at 3 months)	Blue collar workers (finnish state railways & post and telecommunications establishment) with chronic or recurrent LBP for at least 2 years Currently in physically strenuous or moderately strenuous work and for at least 10 years LBP affected working or functional capacity and led to sick-leave in last 2 years (not severely disabled) At work or on temporary sick leave at baseline	3 months	Stepwise logistic regression	(Q, CD) Distress Health locus of control Controlled for: age; gender; duration of LBP; number of previous back surgeries; Treatment group; disability)	Successful outcome (gain = change in LBP disability/ no gain)	*After controlling for age, gender, initial LBP disability, duration of LBP, number of previous back surgery, treatment group*, decrease in disability predicted by: More severe LBP disability at baseline, stronger belief in internal back pain control
Heneweer et al., 2007 (113) (Holland)	66 (56 at 3 months)	first time consulting physiotherapist for a first or new episode of LBP for less than 12 weeks (09/2002 – 09/2004) Nonspecific LBP At least 3 months pain free before 21-60 Exclusion: Suspected specific cause (trauma, tumor, rheumatoid arthritis, osteoporosis, infection, nerve root involvement	3 months	Logistic regression	(Q) Fear-avoidance (work, activities) Kinesiophobia Pain coping (active, passive) Acute LBP questionnaire on sociodemo & psychosocial risk (ALBPSQ) (pain, function, psychological factors, fear-avoidance)	Recovery (recovery and absenteeism)	Non recovery at 3 months predicted by: higher pain (ALBPSQ subscale)
Hewitt et al., 2007 (114) (Australia)	847 (720 at 9 weeks) For work status: 290 (247 at 6 months)	Patients referred to physiotherapy for sub-acute or chronic musculoskeletal pain after work injury ≥ 6 weeks duration clearance by GP to participate in exercise-based physiotherapy Exclusion: Signs/symptoms suggestive of red flag (e.g. tumour; systemic illness; inflammatory disease or infection; acute stage of injury; signs of psychological	9 weeks, 6 months	Linear regression, logistic regression	(Q) Gender Age Time off work Work status Non English speaking background / interpreter required Duration of injury Duration of previous intervention Surgery to compensable area Area injured Pain intensity Activity limitations	Functional limitation Pain intensity Work upgrade Work status	Higher level of activity limitations at 9 weeks predicted by: high baseline activity limitations, interpreter required, longer duration of previous intervention, being off work at baseline Higher pain intensity at 9 weeks predicted by: high baseline pain intensity, high baseline activity limitations, non-english speaking background, longer duration of previous intervention No upgrading at work at 9 weeks predicted by: off work at baseline, longer duration of previous intervention, injury to spine, interpreter required Off work at 6 months predicted by: off work at

		or psychosocial factors warranting multidisciplinary treatment					baseline, non-spinal injury
Heymans et al., 2006 (115) (Nether-land)	268	Workers working at different plants consulting occupational physician (10/2000 – 11/2002) Sick-listed for 3 to 6 weeks due to non-specific LBP 18-65 Exclusion: Sick-listed less than one month, specific pathology, pregnancy, judicial conflict at work	12 months	Cox PH	(Q) *Sociodemographic* (age; gender; education; smoking; physical activity) *History* (history of LBP; duration of complaints; radiation) Functional limitations Pain intensity *Work characteristics* (years in current job; partial or full work absence; job satisfaction; job control; job demands; social support; physical demands: working daily with vibration, bending, twisting of trunk, daily lifting, whole body vibration, daily stooping) Treatment expectations RTW expectations Beliefs that cause of LBP is specific HRQOL	Duration of absenteeism before lasting RTW (4 weeks over 12 months) Duration of absenteeism before first RTW (1 day)	Longer duration of absenteeism before lasting RTW predicted by: higher pain intensity, expected longer period to resume work, lower job satisfaction, pain radiation, less social support at work, lower expectation of occupational therapist treatment success Longer duration before first RTW predicted by: (same as lasting RTW)
Hill et al., 2004 (116) (United-Kingdom)	1359 (786 at follow-up)	Adult registered with 2 primary care practice 1 month period prevalent neck pain (sub-sample identified in survey) 18-75	12 months	Logistic regression	(CD, Q) *Demographic & health related factors* (age; gender; social class; marital status; number of children; height; weight; BMI; current & past smoking; daily alcohol intake; LBP comorbidity; previous neck injury; time since previous neck injury) Perceived general health Psychological distress (GHQ) *Occupational factors* (employment status; job satisfaction or dissatisfaction with not working; physical demands in current or last job – lifting, sitting, standing, digging, driving) *Physical or lifestyle factors* (perceived physical activity for age; gardening; do-it-yourself work; daily walking; cycling; watching TV)	Persistence of neck pain (1 day or longer last month and defined as chronic, recurrent or continuous pain)	Persistent neck pain predicted by: age (older 45-59), LBP comorbidity - employment status (not working at baseline), physical activities - cycling
Hogg-Johnson & Cole, 2003 (117) (Canada)	907	New lost-time compensation claim from 05/1993 – 11/1993 Workers off work because of soft tissue injury (back, upper & lower limb) Soft-tissue injuries (e.g. sprains; strains; inflammation of joints, tendons & muscles; contusions; repetitive strain; bursitis; synovitis; tenosynovitis; tendinitis) Still on compensation benefits 4 weeks after accident	4, 10, 16, 52 weeks	Cox proportional hazard	(Q, CD) *sociodemographic* (age; gender; marital status; household & individual income; education; occupation; weekly benefit rate; sole wage earner; immigrant status) *Pain/symptoms* (part of body injured; pain radiation: back & upper limb; travelling pain; frequency of pain; nature of pain – tingling, numbness; nature of onset – sudden or gradual) *Past history* (recurrence of previous problem; length of time of pain since onset; length of episode; previous claim problem; chronic pain grade) *Comorbidity* (other serious conditions; surgery for other conditions; hospitalized for other conditions; previous other injury) *Workplace factors* (industry; size of workplace; union membership; supervisor of work; contact with workplace since injury; arrangement from workplace for RTW) *Workplace psychosocial factors* (supervisor reaction to injury; co-worker reaction; feeling that claim will affect job; accommodation offers; do anything about unfair treatment by employer/by compensation board; knowledge of compensation law; job satisfaction; doing regular job when	Duration of compensation	Longer compensation period at 52 weeks predicted by: higher lumbar functional status (in first 8 weeks only), higher upper limb functional status (in first 8 weeks only), higher lower limb functional status, poor recovery expectation, stable or worsening pain between baseline and 4 weeks, no offers of work accommodations, change in pain grade X workplace offers : stable or worsening pain between baseline and 4 weeks (only when accommodation were not offered)

					injured; risk of reinjury on return to regular job) *Health quality of life* (SF-36) (general health, mental health, vitality, role emotional, role functional, social functioning, bodily pain, general health perception) *Functional status* (body region specific) Pain grade change *Expectation* (Recovery expectation; extent of recovery compared to expectations; recover enough for return to regular job; expected number of days for recovery; believe received right treatment)		
Hoving et al., 2004 (118) (Nether-lands)	183 (183 at 7 weeks; 178 at 52 weeks)	Consecutive patient consulting GP for neck pain 02/1997 to 11/1998 18 – 70 pain or stiffness for at least 2 weeks neck complaints reproducible during examination <u>Exclusion</u>: Physical or manual therapy for neck pain in last 6 months Surgery for neck Evidence of specific pathology (malignancy, neurological disease, fracture, herniated disc, rheumatic disease)	7, 52 weeks	Logistic & linear regression	(Q, PE) *Sociodemographic* (age; gender; duration of neck pain; previous episodes of neck pain; concomitant complaints: concurrent headache, LBP; radiating pain below elbow; course of neck pain previous 2 weeks – change or not; traumatic cause; disturbed sleep) *Physical examination* (severity of physical dysfunctioning) Pain intensity Neck dysfunction	Pain intensity Neck dysfunction (activities of daily living) Perceived recovery	<u>Pain intensity at 7 weeks predicted by</u>: pain intensity at baseline, age (older ≥ 40), concomitant LBP, concomitant headache <u>Pain intensity at 52 weeks predicted by</u>: pain intensity at baseline, age (older ≥ 40), history of neck pain, duration of neck pain (≥ 13 weeks) <u>Neck dysfunction at 7 weeks predicted by</u>: neck dysfunction at baseline, age (older ≥ 40), concomitant LBP <u>Neck dysfunction at 52 weeks predicted by</u>: neck dysfunction at baseline, age (older ≥ 40), history of neck pain, duration of neck pain (≥ 13 weeks), traumatic cause, course of neck pain 2 weeks before baseline - no change <u>Poor perceived recovery at 7 weeks predicted by</u>: age (older ≥ 40), concomitant headache <u>Poor perceived recovery at 52 weeks predicted by</u>: age (older ≥ 40), traumatic cause, concomitant LBP, course of neck pain 2 weeks before baseline - no change, high severity of physical dysfunction
Hunt et al., 2002 (119) (Canada)	192 (159 at follow-up)	Compensated low back injured workers 18 or older Off work after original injury for 4-6 weeks (subacute) 18 or older No history of back surgery Not pregnant	3 months	Logistic regression	(Q, PE) *Medical history* (medical red flags – serious underlying pathologies: constant and increasing pain not related to activity, bladder or bowel problems related to injury ; injury intensity; active treatment sought; passive treatment sought; Waddell behavioural symptoms; subjective perception of injury severity; cause of injury; thoughts during accidents; latency of onset of pain after accident; current function level; prior effect of back pain on work attendance) *Physical examination* (Neurological assessment L4 - strength on extension of knees, reflexes on knees, sensation on both feet; Neurological assessment L5 - strength on ankle dorsiflexion and great toe extension, sensation on both feet; Neurological assessment S1 - strength of plantarflexion on single leg heel raising, reflexes on ankles, sensation on lateral surface of ankles; Nerve root tension test: straight-leg raise,	RTW status (Working or not working)	<u>Working status predicted by</u>: Perceived severity of disability, injury intensity

					Waddell knee-extension test; Composite functional score – push up, prone active extension, active sit-up, straight leg raise, timed walk; composite Waddell behavioural signs score; range of motion – lumbar flexion, extension, left/right lateral flexion)		
Hunter et al., 1998 (120) (USA)	178 (140 at follow-up)	Railroad employees treated at orthopaedic rehabilitation center between 01/1987 & 12/1989 Employed at single railroad company Male LBP with or without leg pain Completion of rehabilitation program of at least 15 days Back claim resolved by October 1, 1993	Before/after treatment, 3.9 to 6.8 years (mean 5.2 years)	Logistic regression	(Q, CD, PE, I) *Sociodemographic* (age; length of employment; wage rate; physical demands of job; prior claim data (previous injuries, previous surgeries) current claim data (lost work days, number of days from injury to treatment, litigation, total settlement of claim); smoking; amount of smoking) *Physical/medical* (*physical strength*: maximal lifts floor to waist, waist to shoulder, shoulder to arm reach, 10m carry; *range of motion*: lumbar flexion and extension; *pain location*: LBP, LBP radiating to knee, LBP radiating below knee) Pain intensity Disability (Oswestry)	Employment status (working, not working)	<u>No return to work for railroad</u>: higher number of lost work days, longer duration between injury and treatment (up to 400 days, beyond which it was predictive or RTW), lower wage <u>No return to work anywhere</u>: longer duration of employment for railroad (> 15 years)
Infante & Lortie, 1996 (121) (Canada)	305 (291 final model)	Compensated LBP Quebec Health and safety commission (CSST) between 11/1988 & 05/1992 Subject receiving conventional rehabilitation treatment <u>Exclusion</u>: Episode of back pain in last 5 years which led to 1 or more lost work days or bedridden for 2 or more days	4 to 1228 days (discharge from treatment)	Cox proportional hazard	(I, Q, MR) *Sociodemographic* (sex; marital status; age; education; smoking habits; previous episode; body mass index; duration between accident and treatment) *Work characteristics* (job title; duration of employment; type of enterprise - public/ private; size of industry; status of employment: occasional, part time, full time; salary insurance; Physical characteristics of work: physical effort; work conditions: piece work, repetitive work, possibility of unscheduled breaks; work satisfaction; satisfaction with work conditions) *Diagnostic and symptoms information* (diagnostic category; nature of accident: effort or movement, fall, crash, slip, other; radiation: to buttocks, legs, knee, heel or toes; neurological symptoms: sensory deficit, muscular weakness, slower reflexes; amplitude of movement; flexion)	RTW	<u>RTW predicted by</u>: Younger age, pain or sprain (disc disorder), shorter interval between accident and treatment, good flexion at beginning of treatment, no neurological symptoms during treatment, longer duration of employment in industry, public industry (vs private), possibility of unscheduled breaks
Infante & Lortie, 1997 (122) (Canada)	230	Compensated LBP Quebec Health and safety commission (CSST) between 11/1988 & 05/1992 Subject receiving conventional rehabilitation treatment Returned to work <u>Exclusion</u>: Episode of back pain in last 5 years which led to 1 or more lost work days or bedridden for 2 or more days	1, 2, 3, 4, 5, 6 months	Cox proportional hazard	(I, Q, MR, PE) *Sociodemographic factors* (sex, marital status, age, schooling, smoking; diagnosis) *Work characteristics* (job title, duration, type of enterprise - public/ private, size of industry, status of employment, salary insurance) *Pain during simple daily movements – functional capacity* (*composite of*: standing up waiting for bus; climbing up and down stairs; sleeping, walking, washing at the sink, sit or watch tv; put on socks/shoes; pick up object from floor; putting things away above shoulders) *Overall pain intensity* *Physical examination and symptoms* (flexion amplitude; pain radiating in each leg, the buttock, the knees, the heel or toes; neurological symptoms – sensory deficit, muscular weakness, slower reflexes; limitation in amplitude of movements) *Work conditions* (return to same company & same job; change in working conditions; satisfaction with changes; reason if changed company or type of work; feel should have been offered another job or job should have been modified or if tasks should have been eliminated or work reduced with more pauses)	First short sickness absence and relapse	<u>Relapse and short sickness absence after RTW predicted by</u>: Higher overall pain and pain when doing simple movements composite (pain forced into model)

Jones et al., 2006 (123) (United-Kingdom)	974 (922 at 3 months)	Patients consulting GP for new episode of LBP (01/2002 – 07/2003) 18-65 No consultation for LBP previous 6 months	3 months	Poisson regression	(Q) *Sociodemographic* (age; gender; income; work status) Coping Pain intensity Functional limitations (RMDQ) Occurrence of back pain daily Duration of current episode Previous history of LBP Previous history of other chronic symptoms	Persistent disabling LBP (pain intensity & functional limitations)	<u>Persistent disabling LBP predicted by</u>: passive coping, higher pain intensity, previous history of other chronic pain symptoms, longer duration of current episode, higher disability, not employed, occurrence of LBP every day *adjusted for age, gender and socioeconomic status
Karels et al., 2007 (124) (Nether-lands)	624 (543 at 6 months)	New consultation in physiotherapy for discomfort in neck and upper extremities (neck, upper back, shoulder, upper arm, elbow, forearm, wrist, hand) (08/2001-07/2002) 18-65 <u>Exclusion</u>: Consultation physiotherapist last 6 months for same complaint Trauma, systemic disorders, generalized neurological syndromes, comorbidity causing severe disability in daily activities	6 months	Logistic regression	(Q) *Sociodemographics* (age; gender; education; BMI; sports participation-leisure physical activities; work participation) *Episode characteristics* (duration; comorbidity – musculoskeletal or not; past trauma of arm, neck, shoulder; prognosis by physiotherapist; specific or non-specific; local complaint or more than one location; pain work-related) Pain severity *Psychosocial factors* (pain-related fear; social support; distress; somatization; catastrophizing) *Work factors* (physical work load; quantitative work demands; skill discretion; decision latitude; supervisor support; coworker support; job insecurity)	Subjective recovery (persistence of complaints)	<u>Persistence of complaints predicted by</u> : higher somatization, higher kinesiophobia, higher catastrophizing, longer duration of conplaints <u>Persistence of complaints for working subjects predicted by</u> : higher catastrophizing, longer duration of complaints, low decision latitude *adjusted for age, gender, baseline severity of complaints
Karjalainen et al., 2003 (125) (Finland)	164 (160 at 3 months; 161 at 6 & 12 months)	Employed patients consulting primary health care centers Disabling LBP for 4 to 12 weeks 25 – 60	(3, 6) 12 months	Linear regression	(Q, I, MR, PE) *Sociodemographic* (age; gender; education; BMI) *Work factors* (type of work – blue collar; satisfaction with job; days of sick leave past 3 months) Self-rated health status Perceived risk of not recovering *Pain* (frequency; troublesomeness; interference with daily life; radicular symptoms below knee) Back specific perceived disability Health-related quality of life Expectation of treatment effect Satisfaction with medical care	Recovery from pain (pain intensity; occurrence of daily symptoms; bothersome pain; interference with work and daily life) Perceived functional disability	<u>High pain intensity is predicted by</u>: high pain intensity, greater perceived risk of not recovering <u>Higher occurrence of symptoms predicted by</u>: age (older), higher pain intensity <u>Very bothersome pain predicted by</u>: radicular symptoms below knee, higher pain intensity, greater perceived risk of not recovering <u>Higher interference with work/daily life predicted by</u>: age (older), higher pain intensity, higher perceived disability (Oswestry), greater perceived risk of not recovering <u>Higher perceived disability:</u> age (older), high BMI, high pain intensity, greater perceived risk of not recovering

						Health related quality of life Satisfaction with medical care HC cost Days of sick leave	<u>High health related quality of life predicted by</u>: age (younger), low BMI, high perceived disability <u>High satisfaction with medical care predicted by</u>: greater expectation of treatment effectiveness, high work satisfaction <u>High health care costs predicted by</u>: age (older) <u>Increased risk of sickness absence predicted by</u>: physically demanding job (blue collar), more days on sick leave at baseline
Klenerman et al., 1995 (126) (United-Kingdom)	300 (162 at 2 months; 196 at 12 months; 123 at all collection point)	First episode of acute LBP Benign musculoskeletal LBP according to GP (general practice) Pain ≤ 1 week before seeing GP	2, 12 months	Multiple regression analysis, discriminant analysis	(Q, I, PE) *Sociodemographic composite* (age; gender; marital status; employment status; smoking habits; referring doctor) *Historical factors composite* (History & severity of previous LBP; severity of present LBP; onset) *Fear-avoidance composite* (Stressful life events, somatic perceptions, Pain coping, previous pain severity history) Disability <u>Also at 2 and 12 months</u> : *Psychosocial composite* (Depression, pain drawing (severity), inappropriate signs & symptoms (Waddell), disability) *Physical examination composite* (BMI; neurologic test, straight leg raising, prone knee bent, hip flexion, sit-up, lateral flexion, sagittal movement, area affected; clinical diagnosis by GP)	Pain/disability (composite factor) Sick leave Course of back pain (intermittent, constant or non pain)	<u>Pain/disability (baseline to 2 months) predicted by</u>: fear-avoidance variables, history of LBP <u>Pain/disability (baseline to 12 months) predicted by</u>: fear-avoidance variables, demographic, history of LBP <u>Pain/disability (2 to 12 months) :</u> psychosocial factor (depression, pain severity, inappropriate signs and symptom; disability – RMDQ/ Oswestry; somatic perceptions), physical variables (side flexion; neurologic deficit; sagittal extension; nerve root tethering; sagittal flexion; ability to sit up), fear-avoidance variables <u>Sick leave predicted by</u>: demographic, historical, fear-avoidance <u>Course of back pain predicted by</u>: demographic, historical
Koleck et al., 2006 (127) (France)	99 (90 follow-up)	Consecutive patient consulting GP for acute LBP and/or having stopped working or performing domestic activity because of pain within 3 months Between 10-90 days of onset of LBP <u>Exclusion</u>: Recurrent LBP or evidence of previous LBP within 2 years LBP not related to common	12 months	Hierarchical multiple regression	(Q, I) *Demographic* (age; gender; marital status; number of children; obesity; income) *Medical* (history of spinal impairments: scoliosis/ scheueurmann disease/ listhesis/spinal trauma, previous LBP last 2 years, sciatica; characteristics of episode: evidence of discal pathology, facet joint pathology, medication – analgesic, anti-inflammatory; LBP due to work accident) Trait and state anxiety Trait and state depression *Locus of control* (perceived control on pain, irrational beliefs about pain, internal causal attribution of pain) Job satisfaction Perceived social support	Functional non-ajustment (composite of functional limitations, duration of sick leave, number of consultations, GP's opinion about evolution of LBP) VS	<u>Functional non adjustment predicted by (predispositional factors)</u>: gender (men), history of trauma over one year, reduced activity because of pain <u>Functional non adjustment predicted by (transactional factors)</u>: coping distraction- praying

		degenerative origin (inflammatory, diseases, cancer, discal or spinal infection, osteoporosis, …) Recent spinal trauma Severe psychiatric disorder with hospitalization			Coping strategies Pain intensity Reduced activity	perceived good health Emotional non-adjustment (composite of severe psychological distress, anxiety, depression) VS well-being	 Emotional non adjustment predicted by (predispositional factor)s: trait depression Emotional non adjustment predicted by (transactional factors): helplessness-hopelessness (high anxiety & depression)
Kool et al., 2002 (128) (Switzer-land)	99 (90 at 12 months)	Referred to clinic by physician for long history of LBP Patient willing to go back to full time work More than 6 weeks off work in last 6 months because of CLBP, some with a specific diagnosis (pain with radiation to lower limb with neurological signs; confirmed compression of a spinal nerve root; spinal stenosis; LBP less than 6 months after surgery) 20 to 60 No comorbidity contributing to disability and sick leave	12 months	Logistic regression	(Q, PE) Pain intensity Step test (aerobic) Pseudo strength test *Behavioral-nonorganic signs (3 out of 5)* (tenderness: superficial, deep; simulation test: axial loading, rotation; distraction test: straight leg raising; regional disturbance: sensory, weakness; overreaction) Two out of four positive tests (to avoid false positive) *Psychosocial factors* (workload; off-work duration; unemployment; nationality) Disability (RMDQ)	RTW	Non RTW predicted by: two out of four positive tests (no psychosocial factors significant)
Kovacs et al., 2005 (129) (Spain)	366	Patient consulting GP for acute LBP for less than 12 weeks with or without referred pain to the leg Exclusion: Treated or untreated central nervous system impairment; criteria for surgery including progressive motor deficit; sphincter impairment from neurological cause; disabling sciatic pain (in absence of backache 6 weeks or more due to compromised nerve root; red flags(oncologic disease previous 5 years, symptoms like weight loss, fever, chills,	15 and 60 days	Linear regression, logistic regression	(Q) *Sociodemographic* (age; gender; profession; duration of episode) Pain intensity Referred pain Functional limitation (RMDQ)	QOL (EuroQol) Functional limitation (RMDQ) Improvement	Lower QOL at 15 days predicted by: higher disability, higher pain intensity Lower QOL at 60 days predicted by: higher disability, higher pain intensity (only with subjects with duration < 14 days), higher intensity of referred pain higher functional limitations at 15 days predicted by: higher pain intensity, higher intensity of referred pain higher functional limitations at 60 days predicted by: Higher pain intensity, higher intensity of referred pain (only with subjects with duration ≥ 14 days) Lack of improvement in disability at 60 days

		urinary tract infection; history of intravenous drug use)				in disability & QOL	predicted by: duration of pain ≥ 14 days Improvement in QOL at 60 days predicted by: improvement in functional limitations
Kuijpers et al., 2006 (130) (Nether-lands)	587 (6 weeks: 487; 6 months: 538)	Consecutive patients consulting GP for new episode of shoulder pain (deltoid and upper arm) (01/2001 – 06/2003) 18 or more Not consulted GP or received treatment for shoulder pain in last 3 months Exclusion: Severe physical or psychological conditions (fractures, luxation, rheumatic disease, neoplasm, neurological or vascular disorders, dementia)	6 weeks & 6 months	Logistic regression	(Q, CE) *Sociodemographic* (age; gender; education) *Episode characteristics* (duration; gradual/acute onset; precipitating cause: unecpected movement, strain/overuse usual activities, strain/overuse unusual activities, injury, sport injury, unknown; shoulder complaint in past; neck complaint in past; dominant side involved; comorbid psychological complaint; musculoskeletal comorbidity: neck/high back, LBP, upper extremity, lower extremity) Shoulder pain intensity Shoulder functional limitation *Physical examination* (ROM shoulder; shoulder pain with movement; ROM neck; neck pain with movement) *Physical factors* (dynamic physical workload: pushing, pulling, lifting, weights, working with hands above shoulder, use of vibrating tool; repetitive movement; level of physical activity vs others) *Psychosocial factors* (coping: catastrophizing, coping with pain, internal LOC, external LOC; distress; depression; anxiety; somatisation; fear-avoidance; kinesiophobia)	Perceived recovery (persistent symptoms)	Persistent symptoms at 6 weeks predicted by: longer duration of symptoms, gradual onset, higher pain intensity, concomitant psychological complaints, repetitive movements, increasing neck pain score with movement Persistent symptoms at 6 months predicted by: longer duration of symptoms, gradual onset, higher pain intensity, concomitant back pain, increasing shoulder pain score with movement
Lancourt & Kettelhut., 1992 (131) (USA)	161 (134 at follow-up)	Consecutive LBP patients between 10/1987 – 03/1988 Receiving compensation for acute to chronic LBP Exclusion: Non spinal condition	6 months	Discriminant analysis	(Q, PE) *Sociodemographic* (age; gender; education; smoking; coffee consumption; prior compensation; length off work; marital status; living arrangement; family illnesses; relocation because injury) *Personal history* (personal illnesses; history of back pain; history of leg pain; history of other ailment; disability (oswestry); prior surgery; lift score) *Employment factors* (length of employment; seasonal job; job physical difficulty; job satisfaction; light duty available; fired/terminated) *General stress* (coping abilities, financial difficulties; stress index – 2 or more problems) *Physical/diagnostic factors* (*Non-organic physical signs*: superficial palpation,, axial load, simulated rotation, straight leg raise, sciatic tension (sham), hip flexion, hip/knee flexion, burns test, verbal magnification, sensory pain sensation; *Organic/non-organic signs*: gait, deep palpation, forward flexion, ease of forward flexion, extension, lateral bending, toe walk, heel walk, supine straight leg raise, sciatic tension; *Organic physical signs*: knee jerk, ankle jerk, muscle atrophy, quadriceps strength, plantar flexion, extensor hallucis, sitting straight leg raise, changes in positions; *Diagnostic findings*: MRI, EMG, myelogram, CT scan)	Return to work	No RTW predicted by (for total sample): prior compensation, higher disability (oswestry score ≥ 55), history of leg pain, length off work (> 6 months), living arrangement (other than single or married), length of living arrangement (≥ 7 years), relocation (due to problems), fired or terminated, general coping, non-organic physical signs (presence of verbal magnification; superficial palpation – moderate/severe tenderness; sciatic tension – non-negative), organic/non-organic signs (supine straight leg rise (< 90°); gait - uneven or assisted), organic physical signs (muscle atrophy ≥ ¼ inch) No RTW predicted by (for time off work ≤ 6 months): higher disability (owestry score ≥ 55), history of leg pain, living arrangement (other than single or married), relocation (due to problems), employed less than 26 weeks, financial difficulty, non-organic physical signs (presence of verbal

							magnification; superficial palpation – moderate/severe tenderness; sciatic tension – non-negative), organic/non-organic signs (ease of forward flexion – slow or difficult; deep palpation – any tenderness), organic physical signs (muscle atrophy ≥ ¼ inch) No RTW predicted by (for time off work > 6 months): prior compensation, living arrangement (other than single or married), length of living arrangement (≥ 7 years), financial difficulty, mixed organic/non-organic signs (supine straight leg rise (< 90°); lateral bending – decrease ≥ 25%; gait - uneven or assisted ; ease of forward flexion – slow or difficult; deep palpation – any tenderness), organic physical signs (sitting straight leg raise)
Lanier & Stockton, 1988 (132) (USA)	121 (follow-ups: 116)	LBP patients (workforce) in general practice between May & October 1986 Onset of pain≤ 28 days before consultation Exclusion: Pregnancy, pain above T12, fever/flu-like illness	6, 12 weeks	Multiple regression	(I, MR, PE, 1 Q) *Sociodemographic* (age; gender; ethnicity; education; BMI; obesity; smoking; amount of smoking) *Job factors* (manual/unskilled or professional/technical; physical requirement of work) *Medical factors* (onset of pain work-related; past history of back problems; pain radiation to leg; straight leg raising sign < 60°; physician diagnosis of actual or possible disc problem; history of anxiety and depression; initial disability)	Lost work days Disability (RMDQ)	Lost work days at 6 weeks for manual/unskilled workers (N=43) predicted by: more days off work (bed rest) prescribed by physician, prolonged daily hours of manual work, diagnosis of possible disc lesion Lost work days at 6 weeks for professional/ technical workers (N=61) predicted by: history of anxiety or depression, more days off work prescribed by physician Disability at 6 weeks predicted by: Prolonged hours of manual labor, history of anxiety and depression, physical signs and symptoms of disc problem (straight leg raising < 60°, radiation) Disability at 6 weeks for patient not involved in manual work is predicted by: smoking 10 or more cigarettes per day, history of depression or anxiety
Leroux et al., 2004 (133) (Canada)	968 (849 at 12 months)	Workers consulting in primary care (emergency or GP) for non-specific back pain (lumbar, thoracic, lumbosacral) between 1999-2000 Unable to accomplish work for at least 1 day 18 – 64 Have had same job ≥ 3 months Have a job to return to	12 months	Multiple linear regression	(I, MR, Q) *Psychosocial work characteristics* (decision latitude ; psychological demands; social support at work) *Confounders:* *Sociodemographic* (age; marital status; education; work schedule (full or part time); duration of work in same job; smoking) *Physical variables* (type of back pain episode: one time, recurrent, persistent; pain history; back-related functional limitations; self-reported health status; worst intensity of pain last 6 months; Diagnoses) Job satisfaction *Physical work characteristics* (frequency of trunk flexion, lateral bending,	Disability (Back-related functional limitations (RMDQ))	Higher functional limitations for women predicted by (analysis stratified according to social support): high social support & high decision latitude (vs low social support and high decision latitude) (adjusted for baseline functional limitation & confounders[1]: age (forced), somatization, worst pain last 6 months), phychological job demands (adjusted for confounders: age (forced), worst pain last 6 months) Lower functional limitations predicted by (analysis stratified according to type of back

		<u>Exclusion</u>: Specific pathologies (cancer, spinal infections, vertebral fractures, systemic disease, cauda equina syndrome, referred pain, major medical illness) and pregnancy			torsion, heavy lifting, whole-body vibration) *Psychosocial variables* (depression; somatization; stressful events past year; fear-avoidance beliefs - activity and work)		<u>pain)</u>: low psychological demands & high decision latitude (for subjects with persistent back pain) (compared to other 3 categories of job strain model: high demands/low latitude, low demands/low latitude, high demands/high latitude))
Linton & Hallden, 1998 (134) (Sweden)	137 (132)	Patients from primary health care clinics with acute/subacute back or neck pain 4 months off work or less during last year (previous pain problems and multiple pain sites allowed)	6 months	Discriminant analysis	(1 Q of 24 items) *Sociodemographic* (age; gender; nationality; number days of sick leave in last 12 months) *Work characteristics* (heavy/ monotonous work) *Function & pain* (pain site; duration of pain; current pain intensity; average pain intensity last 3 months; frequency of pain episode last 3 months; capacity for daily activity like light work, walk, chores, shopping; sleep) *Psychological reactions* (Coping with pain; depression last week; tension/anxiety last week; perceived risk of chronicity; perceived chance of working in 6 months; job satisfaction) *Fear avoidance belief* (belief that physical activity worsens pain; beliefs that increase in pain implies should stop activity; belief should not work with current pain level)	Days on sick leave (recovered = o days; short term = 1-30 days; long-term ≥ 31 days)	<u>Number of days on sick leave predicted by</u>: Belief should not work with current pain level (fear-avoidance), perceived chance of working in 6 months, capacity to do light work, stress, number of sick leave days last 12 months
Lotters et al., 2006a (135) (Nether-lands)	321 (287 at 12 months, 253 retained)	Patients on sick-leave for musculoskeletal disorders for 2 to 6 weeks Enrolled by occupational health physician or absenteeism register <u>Exclusion</u>: Specific underlying pathology (e.g. fractured leg, discus prolapse)	12 month	Cox PH	(Q, MR) *Sociodemographic* (age; gender; BMI; education: marital status: diagnosis: LBP, neck/shoulder, upper, lower; sports activities; household activities) *Work physical factors* (overall perceived physical workload; Physical factor: manual material handling, frequent bending/twisting of trunk, whole body vibrations, repetitive movements hand/arms, hand/arm vibrations, working with bended neck) *Work psychosocial factors* (work demands; skill discretion; decision latitude; relation colleagues; relation supervisor; conflict in workplace; own perception of ability to work) *Nature of complaints* (Pain intensity; sciatica for LBP; chronic complaint-over 3 months last 12 months prior to baseline; seriousness of complaint-over 3 symptoms; functional disability; musculoskeletal comorbidity) *General health* (SF12, EuroQol) (perceived general health; physical health; mental health; role mental health; role emotional; social functioning) *Medical care & sick leave history* (visiting occupational physician; visiting GP; visiting specialist; visiting physio; prior sick leave)	Sickness absence duration	<u>Longer duration of sickness absence at 12 months predicted by</u>: higher perceived pain, perceived inability to RTW, presence of sciatica <u>Longer duration of sickness absence at 12 months for upper extremity disorders (N=104) predicted by</u>: gender (female), high perceived physical workload, visiting a specialist, chronic complaints previous 12 months, poorer general health <u>Longer duration of sickness absence at 12 months for LBP (N=129) predicted by</u>: higher pain intensity *adjusted for age and gender
Lotters et al., 2006b (136) (Nether-lands)	160	Lost-time claim due to musculoskeletal disorder No claim in last 3 months Workers off work 7 days within the first 14 days after injury Assessed within 4 weeks of injury	12 months	Cox PH	(Q) *Sociodemographic* (age; gender;education; personal & family income; fear of income loss; workplace size; claim history last 5 years) Depression Fear-avoidance *Perceived general health* (physical) Perceived pain Comorbidity Perceived physical workload	Duration of compensation	<u>Longer duration of compensation predicted by (with or without work related factors)</u> : more depressive symptoms, poorer perceived physical health * adjusted for age and gender

		Exclusion: Fracture, amputation, burn, hernia, head injury, concussion, electrocution			*Work related physical factors* (heavy loading;; repetitive movement) *Work* related psychosocial factors (decision latitude; psychological demands) Variables not retained because not related to depressive symptoms, fear-avoidance or self-efficacy: (marital status; work accommodation available; work status: rtw sustainable, rwt unsustainable, no rtw; site of injury; collar classification: white, pink, blue indoor/outdoor; employment status: full or part time;general health (mental) whole body vibration)		
MacDermid et al., 2007 (137) (Canada)	227	Patient consulting orthopaedic clinic for distal radius fracture Working Assessed within first week post injury Exclusion: Complex trauma including nerve lacerations	3 months	Linear regression	(Q, PE) *Sociodemographics* (Age; gender; compensation; smoking; education; *Work factors* (work demands for hands) *Episode characteristics* (level of impact/injury; mechanism of injury: fall on ice, other fall, other injury; history of previous falls; type of fracture: non-articular, partial articular, fully articular; surgery; received physiotherapy) *Perceived general health* (physical function, role physical, role emotional, bodily pain, vitality, social function, mental health, general health) Wrist pain & disability Upper extremity pain & disability *Physical examination* (grip strength; range of motion: pronation, supination, flexion, extension, radial, ulnar; dexterity; total impairment) *Displacement measured by radiography* (radial shortening, dorsal angulation, radial inclination, intra-articular step-off, involvement of distal radio-ulnar joint)	Time lost from work	Longer time lost from work predicted by: higher upper extremity pain & disability, higher work demands for hand, age (younger), higher total physical impairment
MacDermid et al., 2002 (138) (Canada)	120	Patients with distal radial fractures Consulting orthopaedic clinic within 1 week of fracture	6 months	Stepwise linear regression	(Q, PE) *Sociodemographic* (age; gender; education; compensation - benefits or litigation) Intra-articular nature of fracture (nonarticular, partial articular, fully articular) Radial shortening (prereduction, postreduction)	Pain & disability	Higher pain and disability predicted by: compensation (benefits or litigation), prereduction radial shortening (more severe bony displacement), lower education
Macfarlane et al., 1999 (139) (United-Kingdom)	246	General practice patients consulting for LBP (between 12th rib and gluteal fold) 18-75	1-2 weeks after 1st consulta-tion	Logistic regression	(Q, MR) *Sociodemographic* (age; adequacy of income; social class) *Health and lifestyle* (History of LBP; usual duration of past episode; Self-perception of general health; BMI; level of physical activity, current smoking status) Psychological distress (GHQ) *Employment* (Working status, satisfaction with non working status, work satisfaction) *LBP episode* (duration of symptoms prior to consultation; currently having LBP symptoms – lasting more than 24 hours in last month; pain intensity – worst level; type of onset – gradual or sudden; widespread pain; pain in leg; work related pain; beliefs about cause of back pain)	Improved vs not improved (stayed same or worsened)	Improved (Males) are: low pre-morbid distress, short duration of symptoms prior to consultation, sudden onset of symptoms (vs gradual), perception that symptoms are not work related *no significant predictors for females
McIntosh et al., 2000a (140)	1752	LBP from work injury claiming benefits between January 1 to December 31	1 year	Cox PH (survival analysis)	(CD, MR, Q) *Demographic* (gender, age, industry, physical demands of work, strength requirements, weekly benefits paid, weekly pre-accident earnings, lagtime	Time receiving compensation (days)	Longer time receiving compensation predicted by: working in construction industry, age (older), lagtime between injury and treatment (longer)

(Canada)		1994 Less than 91 days between reported injury and first physiotherapy treatment Receiving compensation (rehabilitation program) No history of spine surgery			between injury & treatment) *Physical* (presence of comorbidity; constancy of pain or intermittent; diagnosis; L4; L5; S1; saddle sensation; straight leg raising; femoral nerve stretch; number of Waddell nonorganic signs; pain location : back/butt, leg; previous episode; sleep disturbance) Back pain intensity Leg pain intensity Functional status *Injury information* (cause of episode: work/car accident, other, unknown; sudden/gradual onset; duration of pain; ability to do activities; litigation; smoking; need for rest during day; frequency of doctor visits; pain medication)		(contribute less to prediction after 180 days of compensation), leg pain (predicts more in the first 30 days of compensation), 3 or more waddell nonorganic signs <u>Reduced time receiving compensation predicted by</u>: higher functional status (questionnaire score), intermittent pain, previous episode of LBP
Miranda et al., 2002 (141) (Finland)	333 (NR)	Employees in forestry with severe knee pain (> 30 days in last 12 months) recruited in 1992 with follow-ups in 1993, 1994, 1995 Baseline in this study =1994 <u>Exclusion</u>: Rheumatoid arthritis	12 months	Logistic regression	(Q) *Sociodemographic* (age; gender; BMI: smoking; frequency of physical exercise; sports activity) Types of sports Mental stress Previous knee injuries *Work factors* (twisting of trunk; working with forward flexion; work in kneeling or squatting position; working in sitting position; working with trunk flexed forward in standing or kneeling position; daily lifting of loads; duration of operating motor vehicle; physical strenuousness; overload: difficulty & hurry at work; risk of accident at work; job satisfaction)	Persistence of knee pain (severe VS not severe pain)	<u>Persistence of knee pain predicted by</u>: age (45-54), job dissatisfaction, twisting movement of trunk *Adjusted for gender & age
Miranda et al., 2001 (142) (Finland)	419 (NR)	Employees in forestry with severe shoulder pain (> 30 days in last 12 months) recruited in 1992 with follow-ups in 1993, 1994, 1995 Baseline in this study =1994 <u>Exclusion</u>: Rheumatoid arthritis, part time work	12 months	Logistic regression	(Q) *Sociodemographic* (age; gender; BMI: smoking; frequency of physical exercise; sports activity) Types of sports Mental stress Previous shoulder injuries *Work factors* (repetitive work; hand/arm vibration; daily lifting of loads; twisting of trunk; working with forward flexion; work with hand above shoulder; working with neck rotation; working in sitting position; physical strenousness; overload: difficulty & hurry at work; risk of accident at work)	Persistence of shoulder pain (severe VS not severe pain)	<u>Persistence of shoulder pain predicted by</u>: age (45-54), overload at work *Adjusted for gender & age
Ohlund et al., 1996 (143) (Sweden)	103 (101)	Blue collar workers at car manufacturing plant Sick leave > 6 weeks due to non specific LBP between January 1984 to June 1986 No absenteeism from work due to LBP in previous 3 months <u>Exclusion</u>: Herniated disc, spondylolisthesis, spinal stenosis, instability where	2 years	Logistic regression	(Q, I) *Socioeconomic factors* (age; length; weight; work history; lifestyle: smoking habits, physical exercise, BMI; housing; economy; family; ethnicity) *Clinical history* (past & present complaint of LBP: duration, frequency of back complaints; musculoskeletal complaint last 12 months; type & extent of drug use (medication) ; response to previous treatment) *Pain* (intensity; location- pain drawing) *General health* (subjective health, psychic well-being) *Psychosomatic complaint* (organ neurosis, stress-related) Subjective disability (RMDI) *Distress* (depression (zung) ; somatic perception (MSPQ)	Absenteeism > 6 months vs 3-6 months	<u>Chronicity (absenteeism > 6 months) predicted by</u>: overt pain behaviour (motor), covert pain behaviour (negative cognitive score), more musculoskeletal complaint during last 12 months, mental strain from monotonous work

		surgery was indicated, prior back surgery, vertebral fracture, tumor of the spine, inflammatory disease, pregnancy, major medical or psychiatric disease			Health index/life style Life events Social network/support *Working environment* (physical load: heavy lift, repetitive work, physically demanding, fixed working position; mental strain: hectic, monotonous, mentally strenuous; lack of influence on job: planning actual work, influence on tempo; satisfaction: ability to learn new things, personally stimulating work; *Psychosocial work-related & ergonomic work-related factor (* personal control over own work, positive supervision climate, stimulation from present work, good peer relations at work, optimum work load) Radiologic findings Treatment (active; control)		
Oleinick et al., 1996 (144) (USA)	8628	Workers compensated for first disability episode (in recent past) due to musculoskeletal back injury in 1986	From 1986 to march 1990	Cox proportional hazard	(CD) *Sociodemographic* (gender; age; marital status; dependents; wage compensation level; industry; occupation; establishment size; accident type: fall, impact, overexcertion)	Missed work time (≤ 8 weeks or > 8 weeks)	<u>Acute disability (N=6444), longer length of missed work time (≤ 8 weeks) predicted by (less likely to RTW in first 8 weeks)</u>: gender (female), age (older), more dependents, type of accident (fall injury VS overexertion/positional stress injuries), industry (construction), occupation (white collar) <u>Chronic disability (N=2184), longer length of missed work time (> 8 weeks) predicted by</u>: age (older), establishment size (smaller size), compensation (middle rate VS lowest or highest rate who RTW more quickly)
Reiso et al., 2003 (145) (Norway)	190	Patients with back disorder referred to clinic doctors believed would be certified as sick > 2 months between 09/1997-12/1998 Back disorders, low back disorders without radiation or with radiation/nucleus herniation <u>Ezclusion</u>: Back disorder caused by injury, certified as sick while on rehabilitation allowance, on old age pension, other diagnosis	2 years	Cox regression	(Q, CD) *Demographic* (gender, age, occupation) *Medical factors* (diagnosis: back disorder without radiation, with radiation; pain quality-intermittent or <u>continuous</u>; <u>pain intensity</u>) *Self-assessed function* (<u>physical fitness</u>/ <u>emotional prolems</u>/ <u>daily activities</u>/ social activities/ <u>overall health</u>/ changes in health; ability to perform usual work; <u>predicted absence status in 4 weeks</u>) *Absence data* (disability pension within 1 year before and 2 years after inclusion; <u>degree of sickness certification</u>: part time, <u>full time</u>)	Time to RTW (for at least 60 consecutive calendar days)	<u>Longer time to RTW predicted by</u>: Age (40-49), high pain intensity, low self-assessed work ability, self-predicted absence status/continued certification <u>Shorter time to RTW predicted by</u>: diagnoses with radiation (vs no radiation)
Rossignol et al., 1988 (146) (Canada)	2342	Compensated workers for occupational back injury (cervical, thoracic, lumbar, sacral) in 1981 Not necessarily first lifetime episode	3 years	Logistic regression	(CD) Age Gender Site of symptoms (cervical, thoracic, lumbar, unspecified) Occupation Industrial sector	Duration of disability ≥ 6 months (absence from work)	<u>Disability ≥ 6 months predicted by</u> : age (older), lumbar (vs thoracic)

		Exclusion: Reimbursed for medical care without work absence					
Sandstörm & Esbjörnsson, 1986 (147) (Sweden)	52	Consecutive patients with chronic non-specific LBP in vocational rehabilitation Sick-listed for LBP for ≥ 3 months (most employed) Less than 50 No neurological disturbances	1 & 4 years	Logistic regression	(Q, PE, I) *Sociodemographic* (age; gender; duration of sick-listing) *Patient's prediction* (afraid of working because don't think I will be able to manage; closest relative think I'm too ill to RTW; closest relative worry about deterioration if RTW)	Working (or vocational education) or sick-listed Sick-listed for ≤ 25 days or > 25 days during fourth year Sick-listed for ≤ 6 months or > 6 months during fourth year	Working at 1 year predicted by: patient's own attitude about being able to RTW Longer sick-listing (vs >25 days sick-listed) at 4 year predicted by: patient's opinion of the attitudes of his relatives Longer sick-listing (>6 months) during the 4th year predicted by: patient's own attitude about being able to RTW, longer duration of earlier sick-listing before baseline
Schiottz-Christensen et al., 1999 (148) (Denmark)	524 (503 at 12 months)	Patients consulting GP between 10/1992 and 08/1993 for LBP of less than 14 days duration 18 – 60 Not all on sick leave Exclusion: Episode of LBP in last 6 months, vertebral fracture, malignancies, other disabling illnesses, pregnancy	6, 12 months	Logistic regression	(I, PE, Q) *Demographic* (age; gender; employment status; marital status; BMI) *Medical history* (previous episode of LBP; previous sick leave because of LBP; previous hospitalization because of LBP; previous lumbar x-ray) *History of episode of LBP* (duration of acute pain; sick leave at consultation; aggravation by impulsion; sudden onset; localization: lower back only, radiating to thigh, radiating below knee) *Physical examination* (transfer of pain; restriction of lumbar movement; radiating pain on straight leg raising < 60°; missing reflexes in leg; muscular paresis in leg) *Overall assessment by GP* (LBP probably caused by occupation; patient psychologically very vulnerable to mental stress; patient will probably develop chronic pain)	Poor outcome (on sick leave between questionnaire or not functionally recovered at follow-up) VS fair (not completely functionally recovered but no sick leave) & good outcome (no LBP)	Poor outcome at 12 month predicted by: Assessment by GP of probability of developing chronic pain , previous sick leave due to LBP, disability at time of consultation, assessment by GP that patient is psychologically vulnerable (only in discussion, not in results) *Adjusted for age & gender
Schultz et al., 2002 (149) (Canada)	253 (215 at 3 months)	Compensated low back injured workers (low back injury claim) 18 or older Off work after original injury for 4-6 weeks (subacute, n=192) or 6-12 months (chronic, n=61) Exclusion: No history of back surgery Not pregnant	3 months	Stepwise logistic regression	(Q, PE) *Demographic* (age; gender; marital status; education; employment status; number of dependants on income; percent of family income provided by worker; union membership; years at current job; years with current employer; subacute/chronic) *Medical history* (medical red flags; injury intensity; active treatment; Waddell symptoms; psychological distress past month and pre-injury; passive treatment; medication) *Range of motion* (T12 & S1-S2 extension & flexion; T12 & S1-S2 left/right lateral flexion) *Physical examination* (nerve root tension; lumbar nerve root function; functional tests; Waddell signs; left/right leg typical sciatica; current pain; worst pain during examination; time to complete walk; gait; physical signs of exaggerated pain behaviours; clinical impressions of radiculopathy &	RTW (3 months after evaluation)	RTW predicted by: subgroup (subacute), health status (more vitality), health status (health transition for better), problem better than expected, pain behaviour (less guarding), perception of severity of disability (less), time to complete walk (shorter), right leg typical sciatica

					mechanical non-specific LBP) *Pain behaviour* (guarding; touching; words; sounds; facial expressions) *Pain & disability* (pain intensity; pain intensity & disability (pain grade); Affective /sensory pain (MPQ); pain disability (PDI); physical functioning (WOMAC); pain drawing) *Workplace* (safety environment; disability management; senior management involvement in health and safety; company environment; work accommodation; availability of work capacity evaluation) *Psychosocial* (Depression; State/trait anxiety; Social support; General health status (SF-36)– physical functioning, role physical, bodily pain, general health, vitality, social functioning, emotional functioning, mental health; expectation of recovery: problem better than expected) *Work characteristics* (job content - physical demands, psychological demands, skill discretion, decision authority, job security, co-worker support, supervisor support; Compensation & employer response: Perception of fair treatment by compensation board and employer, Perception of job threatened due to injury, negative reaction from employer to claim filling)		
Schultz et al., 2004 (150) (Canada)	253 (215 at 3 months)	Compensated low back injured workers (low back injury claim) 18-60 Off work after original injury for 4-6 weeks (subacute, n=192) or 6-12 months (chronic, n=61)	3, 18 months	Stepwise logistic regression; linear regression	(Q, PE) *Demographic* (age, gender, marital status, education, employment status, number of children, number of dependants on income, percent of family income provided by worker; subacute/chronic) *Job stability* (union membership, number of full time jobs last 5 years, years at current job, years with current employer) Disability (SIP, WOMAC, PDI) Pain location and distribution (pain drawing- %body pain) Pain intensity (and disability) (pain grade) Depression State anxiety Social support *General health status* (physical functioning, pain, social functioning, mental health, general health, health transition, physical component) *Expectation of recovery* (composite of: expect to get better soon, expect to return to usual activities, RTW in next month, return to preinjury job, expectations of close ones) *Work characteristics* (job content - physical demands, psychological demands, skill discretion, decision authority, job security, co-worker support, supervisor support) Compensation & employer response: Perception of fair treatment by compensation board and employer; Perception of job threatened due to injury; negative reaction from employer to claim filling	RTW (3 months after evaluation) Duration of disability (number of days lost within 18 months after injury) Combined cost of health care and wage loss compensation	<u>RTW (total sample) predicted by</u>: subacute (vs chronic), positive health outcome (perception of better health transition), higher expectation of recovery, less co-worker support (not when considering subacute subsample only) <u>Higher duration of disability(days lost) predicted by</u>: chronic (vs subacute), higher pain, worse health outcome (health transition), greater disability, greater skill discretion, lower expectation of recovery, worse compensation board and employer response <u>Higher wage loss predicted by</u>: chronic (vs subacute), more years with employers, greater skill discretion, lower expectation of recovery
Sieben et al., 2005 (151) (Holland)	222 (174 at 12 months)	Subjects consulting GP for new episode of non-specific LBP (below scapulae & gluteal folds) between 01/2001- 04/2003 Pain ≤ 3 weeks No activity limitations due to LBP in previous 3 months or	3, 6, 12 months, end of study 1.1 to 3.1 years (mean 1.9 years)	Linear regression	(Q) *Sociodemographic* (age; gender; education; employment status: working/ student/housekeeping, unemployed, receiving compensation, sick leave ≥ 12 weeks; occupation) *LBP history* (number of past episodes; age of first episode; previous LBP treatment) *Current episode* (type of onset: gradual/sudden; radiation; duration of pain since onset)	Pain grade	<u>Higher pain grade (pain disability) at end of study predicted by</u>: age (older), higher pain intensity, higher number of previous episodes, lower education, more negative affects

		more 18 to 60 <u>Exclusion</u>: (suspected) specific cause of LBP (e.g. lumbar disc herniation with neurological complaints, tumor or vertebral fracture) , other major disease or psychiatric disorders, pregnancy, insufficient knowledge of Dutch			*Fear-avoidance variables* (Pain intensity, Negative affect, Pain catastrophizing, Functional limitations, Pain-related fear, social interference of LBP, Avoidance of physical activity) Job satisfaction Depression		
Singer et al., 1987 (152) (Canada)	252 (242 at 6 or 12 weeks; 226 at 52 weeks)	Acute pain in lumbar sacral region with or without radiation in leg Recruited by family physician (GP) Free of back pain 30 days prior to current episode 16 or older <u>Exclusion</u>: Neurological signs (deficits in sensation, reflexes or strenght), pregnant, fractures/ spondylolisthesis/ spinal infection/diseases of the hip or pelvis/ gastrointestinal disease/ malignancies/ rheumatoid arthritis	6, 12, 52 weeks	Cox proportional hazard, Kaplan-Meier, logistic regression, linear regression	(Q, PE) *Sociodemographic* (age; gender; Compensation; Medication) *Pain* (present pain intensity at entry; duration of pain at entry; Initial referred pain; Prior episodes of back pain) *Physical examination* (initial straight leg raising; Initial lumbar flexion) Initial Activities of daily living at entry Mc-Gill total pain score & word count	Time to pain recovery (mild pain or less) Pain intensity Time to resumption of normal activity	<u>Longer time to pain recovery predicted by</u>: longer initial duration of pain, more prior episode of pain, high initial pain intensity (trend : P<.10 only) <u>Bad pain outcome (significant only at 6 and 12 weeks) predicted by</u>: high initial pain intensity, longer initial duration of pain, more prior episode of pain <u>Longer time to resumption of normal activities predicted by</u>: high initial pain intensity
Smidt et al., 2006 (153) (United-Kingdom & Nether-lands)	349	Consecutive patients consulting GP for elbow pain from 2 cohorts Diagnosis: lateral epicondylitis 18-70 <u>Exclusion</u>: History of inflammatory arthritis; gross structural abnormality of elbow, contraindication to nonsteroidal anti-inflammatory drug or local steroid injections, pregnancy, signs & symptoms suggesting other cause: cervical radiculopathy; congenital or	1, 6, 12 months	Linear regression	(Q) *Sociodemographic* (age; gender; country of residence; social class based on occupation) *Work* (manual, non-manual, no work) *Episode characteristics* (duration; involvement dominant side; concomitant neck pain; concomitant shoulder pain; previous elbow complaint; intervention: injection, wait-&-see, physiotherapy) Pain intensity	Pain intensity	<u>Higher pain intensity at 1 month predicted by</u>: pain intensity, long duration of complaint, concomitant shoulder pain <u>Higher pain intensity at 6 month predicted by</u>: pain intensity, long duration of complaint, manual work = lower pain intensity (opposite relationship in each RCT) <u>Higher pain intensity at 12 month predicted by</u>: pain intensity, long duration of complaint, concomitant neck pain, higher social class = lower pain intensity

		acquired deformities, surgery of elbow; dislocation; tendon ruptures or fractures last 12 months, systemic musculoskeletal disorders, neurological disorders, consulted for elbow pain last 12 months (RCT1) or treated for elbow complaints with physiotherapy or injections last 6 months					
Soucy et al., 2006 (154) (Canada)	437 (258 at 6 months)	Workers on sick leave for work-related low back pain and receiving compensation (04/2002 – 08/2003) 18-60 initial or new LBP episode in last 12 months On sick leave for 2 to 9 weeks <u>Exclusion</u>: Severe spinal pathology (fracture, tumours, infection, cauda equine, symptoms suggesting nerve compression), previous back surgery, pregnancy, RTW	6 months	Logistic regression	(Q) *Sociodemographics* (age; gender; education; income; civil status; worker seniority; litigation; unionized; company size) Functional limitation Pain intensity Fear-avoidance (work, activities) Job satisfaction Workplace social support *Perceived stress at work* (psychological demand, decision latitude) *Organizational practices* (people oriented culture, safety climate, disability management, ergonomic practices)	Work status (chronic disability if no RTW)	<u>Chronic disability (no RTW) predicted by</u>: gender (male), stressed-out at work, fear-avoidance about work
Steenstra et al., 2005a (155) (Nether-lands)	615 (596 at 26 weeks)	Hospital workers that reported sick leave because of non-specific LBP for more than 1 day in a two year period (01/1999 – 01/2001) Assessed within 2 days of sick leave	26 weeks	Cox regression, linear regression	(Q) *Sociodemographic* (age; gender) Work characteristics (type of job; working hours per week; employed during study) LBP with radiating pain Expected duration of sick leave Treatment by GP or specialist Seeking OP care Hospital admission for LBP Previous sick leave for LBP Diminished mobility Causes for complaints related to (work; furniture/tools/ equipment; awkward positions; physical load; stressful life events; job stress; working hours; work atmosphere; supervisor contacts; organizational change; patients contact; other reasons; consequences of accident and involving adversary)	Duration of absenteeism Lasting RTW to own/equal work (> 4 weeks) Total number of sick leave days	<u>Delayed RTW predicted by</u> : expected sick leave > 10 days , treated by GP or specialist, unable to attend OP office, diminished mobility, unable to attend OP X diminished mobility <u>Delayed LRTW predicted by</u> : expected sick leave > 10 days, treated by GP or specialist, unable to attend OP office, complaints due to job stress, diminished mobility, unable to attend OP X diminished mobility, expected sick leave > 10 days X seeking OP care <u>Higher total number of sick leave days predicted by</u> : age (older), expected sick leave > 10 days, treatment by GP or specialist, seeking OP care, complaints due to physical load, diminished mobility

Storheim et al., 2005 (156) (Norway)	93	Patients sick-listed from a permanent job & receiving partial/full compensation for non-specific LBP for 8-12 weeks between 03/1998-04/2001 Recruited from national insurance offices and general practionners 20-60 No prior sick-listing in previous 12 weeks for LBP <u>Exclusion</u>: Disc herniation with radiculopathy, spinal stenosis with neurological deficit, spondylolysis or spondylolis-thesis over grade 2, spinal fractures, tumour or infection, rheumatic disease, previous back surgery, pregnancy, psychiatric or somatic disease that could interfere with participation, substance abuse, regularly physical exercise	12 months	Cox PH	(Q) *Sociodemographic* (age; gender; BMI; smoking; alcohol consumption; social participation at leisure time; level of physical activity; marital status; children or family responsibility; social & family support; education; work status: full/part time; socioeconomic position: unskilled, skilled, routine non-manual low, routine non-manual high, professional low, professional high; physical performance: cardiovascular, trunk muscle, flexibility) *Work variables* (physical workload; job satisfaction; colleagues support; employer support; irregular schedule/shift work; psychological exhausting job; being controlled at work; ease of reporting work dissatisfaction) *LBP history* (duration of LBP; former sick-listing; former treatment) Pain intensity (back, leg) Functional limitation (RMDQ) *Perceived health status* (physical function, role physical, role emotional, bodily pain, vitality, social function, mental health, general health) Pain self-efficacy Fear-avoidance (work, activities) Distress Life satisfaction	RTW	<u>RTW predicted by</u>: less fear-avoidance for work, less functional limitations, higher cardiovascular fitness
Swinkels-Meewisse et al., 2006 (157) (Nether-lands)	555 (431 at 6 months)	Patients consulting GP or physiotherapists for acute LBP (≤ 4 weeks) between 04/1998-12/2000 Free of LBP 3 months preceding current episode 18-65 Nonspecific LBP independent of radiation <u>Exclusion</u>: Specific LBP (tumors, trauma, infection, fractures, inflammatory disorders), malignancies, operations in lumbar area, pregnancy	6 months	Regression	(Q) *Sociodemographic* (gender; age; marital status; education; occupation; sick leave-baseline; sport activities; health insurance) *Episode characteristics* (duration; radiation; onset-gradual/sudden; number of disability days; preceding episodes) Pain intensity *Fear of movement* (harm, activity avoidance) Functional status (N=337) Participation (home activities, work/household activities, sport activities, leisure activities, social/family activities)	Perceived disability Participation (in various activities & work)	<u>Higher perceived disability predicted by</u>: higher fear of movement/(re)injury, older age, longer duration of symptoms, radiation, less sports activities, higher pain intensity <u>Participation predicted by</u>: Less fear of movement, lower pain intensity, higher education, shorter duration, absence of radiation
Tate et al., 1999 (158) (Canada)	218	All hospital nurses with occupational soft tissue back injuries from 10/1990 to 10/1992	6 months	Logistic regression Tobit regression,	(Q, I) *Sociodemographic* (age; gender; nursing experience; employment full/part time experience on ward where injured; history of prior back injury; nature of injury: sudden/gradual onset; cause of injury: lifting or patient transfer)	Time loss (yes/no)	<u>Time loss after injury predicted by</u>: greater perceived disability (at injury), previous back injury, greater perceived pain (p = 0.054)

		*Not all off work <u>Exclusion</u>: Planned departure from hospital, pregnancy, presence of potentially confounding concurrent medical or chiropractic conditions		linear regression	Pain Disability Early RTW program (including modified work)	Duration of time loss	<u>Longer duration of time loss (including 0 days) predicted by</u>: Previous back injury, greater perceived disability, participation in early RTW program (lower duration of time loss) <u>Longer duration of time loss (Only nurses who had time loss) predicted by</u>: Perceived pain, mechanism of injury (lifting), participation in early RTW program (lower duration of time loss)
Thomas et al., 1999 (159) (United-Kingdom)	246 (180)	New LBP episode (above gluteal fold, below 12th rib) 2 general practice clinics	3 & 12 months	Stepwise logistic regression	(Q, I, PE) <u>Premorbid factors</u> (survey): *Sociodemographic* (age; gender; Social class: derived from job title; employment status ;life style: physical activity compared with peers, smoking status; alcohol consumption habits) Self-rated health *General health* (psychological distress; current (past months) and past LBP) (GHQ) Satisfaction with job or employment status <u>Episode specific factors</u> (1 week after consultation): *Characteristic of episode* (duration of LBP, mode of onset: sudden/gradual, radiation to leg, other pain location) *Physical examination* (Spinal mobility: standing extension, finger to floor, lateral flexion, modified schober's, knee extension)	Persistent disabling low back pain (Low back pain and disability)	<u>Persistent disabling LBP at 12 months predicted by</u>: History of LBP, dissatisfaction with job or work status, widespread pain, radiating leg pain, restriction in 2 or more spinal movements, gender (women)
Turner et al., 2007 (160) (USA)	899	Subjects with new compensation claim for work-related carpal tunnel syndrome (07/2002 – 05/2004) At least 1 day of benefits 18 or older <u>Exclusion</u>: Not missed at least 4 days of work because of carpal tunnel syndrome (criteria dropped after 7th week of enrolment)	12 months	Logistic regression	(Q) *Sociodemographics* (age; gender; race; education; marital status; income) *Symptoms* (bilatreral or unilateral; symptoms severity; functional status) *Work factors* (offered job accommodations; physical demands: forearm twisting, pinching fingers, whole body vibration, physical demands: lifting, carrying, pushing, pulling; psychosocial conditions: hectic, fast paced, excessive work, unscheduled breaks possible, supervisors listens, job satisfaction) Recovery expectations Mental health Catastrophizing Blame for injury Relation with co-workers Work fear-avoidance	Chronic work disability (> 180 days of compensation)	<u>Chronic work disbility predicted by</u>: age (older and younger vs 45-54), higher functional limitations, not offered job accommodations, higher physical demands, low recovery expectations *effect of age regardless of length of job tenure
Turner et al., 2006 (161) (USA)	1068	Subjects with new compensation claim for work-related back pain (07/2002 – 06/2003) At least 1 day of benefits (i.e. at least 4 days of work disability)	6 months	Logistic regression	(Q) *Sociodemographics* (age; gender; race; education; marital status; income) Pain intensity Functional limitations Recovery expectations Mental health Catastrophizing	Chronic work disability (> 180 days of compensation)	<u>Chronic work disability predicted by</u>: gender (male), race (whites), higher pain intensity, higher functional limitations, low recovery expectations , high work fear-avoidance

		18 or older <u>Exclusion</u>: Worker denial of work-related back pain			Blame for injury Relation with co-workers Work fear-avoidance		
Van den Heuvel et al., 2004 (162) (Nether-lands)	778 (NR)	Workers (blue & white collar, care professions) employed for at least 1 year (1994, 1995, 1996, 1998) Regular or prolonged LBP in year prior to baseline	1, 2, 3 years	Logistic regression	(Q) *Sociodemographics* (age; gender; smoking; BMI; exercise habits) *Coping styles* (active, avoidance, support seeking) *Pain & disability* (duration of symptoms; intensity; radiation; functional limitations) *Work physical load* (driving; flexion or rotation of upper body; moving heavy loads) *Psychosocial work characteristics* (quantitative job demands; decision authority; skills discretion; supervisor & co-worker support; job satisfaction)	Recurrence of symptoms Sickness absence	<u>Recurrence predicted by</u>: longer duration of symptoms, medium pain intensity, radiation, higher disability (limitations), flexion or rotation of upper body parts, low decision authority, low job satisfaction <u>Sickness absence predicted by</u>: high disability, low or medium co-worker support, low job satisfaction
Van Den Hoogen et al., 1997 (163) (Nether-lands)	443 (268 at follow-up)	Consecutive patient consulting a general practitioner (11 general practices) between 05/1990-05/1992 LBP of any duration 16 or older Pain in the back (or radiating from the back) between T12 and gluteal fold Specific/non-specific Not pregnant	1 year	Kaplan-Meier, Cox regression, logistic regression	(I, PE, Q) *Sociodemographic* (age; gender; education; occupational low back load : lifting, driving, sitting; duration of car driving; receiving physical therapy) *Medical history* (duration of episode; sciatica: pain radiating up to knee or beyond knee in 1 or both legs; sudden/gradual onset; severity of pain; disability (RMDQ); history of past episode last year; history of surgery for LBP) *Physical examination* (straight leg raising; lumbar flexion; pelvic tilt; scoliosis; *Perceived health& functioning* (pain, declined mobility, disturbed sleep, tiredness, emotional problems, social isolation) GP judgment of presence of psychosocial problems	Time to recovery from pain (at least 4 or more pain-free weeks) Relapse (LBP in 1 or more weeks after end of episode)	<u>Longer time to recovery predicted by</u>: longer duration of the LBP episode, receiving physical therapy during first 5 weeks after initial visit, pain (as aspect of perceived health), history of surgery <u>Relapse predicted by</u>: worse daily functioning (explained only 2% of variation)
Van der Geizen et al., 2000 (164) (Nether-lands ou Holland)	328 (298)	Sick-listed employees recruited through social security administrations between 11/1994-02/1995 LBP episode (spondylosis, spinal stenosis, disc disorders or non-specific back pain) Not working and receiving full sickness benefits for 90 consecutive days 18 - 60 Still have an employment relationship with employer Working in private sector before start of their sick leave <u>Exclusion</u>: No spine surgery in previous	12 months	Logistic regression	(Q, CD, I) *Sociodemographic* (gender; age; education; bread winner; income before/after sick leave; living single; urbanization; smoking; alcohol use) *Health variables* (diagnosis; number of other chronic diseases; pain below knee; pain intensity; other work inhibiting chronic disease; functional capacity-activities of daily living) *Subjective health status* : (energy/vitality, mental health, health change, general health) Subjective work capacity *History of LBP* (past impact of back pain on work; duration/intensity of back pain; history of sick-leave; history of sick leave due to back pain; back pain related to work; earlier work adaptations) *Occupational variables* (labor sector; social security agency; company size; length of service at current employer (seniority); economic position employer) *Job Characteristics* (part time work; usual weekly overtime; management job; job certainty; physical demands; decision latitude; psychological demands; work social support; job satisfaction)	RTW (work status)	<u>RTW predicted by</u>: General health (better), job satisfaction (more), being the bread winner, age (younger), pain intensity (less)

		year before start of sick leave Did not resume work before baseline data collection			*Other* (support during sick leave; work attitude: work for work less for income, work most important in life; responsible for care of others; help with personal problems)		
Van der Waal & al, 2005 (165) (Nether-lands)	251 (89% 3 months; 81% 12 months)	Patients consulting GP in 2001 for new episode of knee complaints (primary or secondary complaint) New episode (no consultation previous 3 months for same symptoms) 18 or older <u>Exclusion</u>: Symptoms possibly caused by a fracture, malignancy, prosthesis, amputation or congenital defect or pregnancy	3, 12 months	Multiple regression	(Q) *Sociodemograhic* (<u>age</u>; gender; BMI; marital status/living together; having children in household; smoking present/past; education; employment status) *Symptoms characteristics* (location 1 knee; duration of current episode; perceived cause of symptoms; history of knee symptoms; pain medication; pain intensity; level of stiffness; functional limitations; in menopause) *Comorbidity* (additional musculoskeletal symptoms: none-only knee complaint, more complaints at lower extremities, complaints of upper & lower extremities; diseases other than musculoskeletal) *Physical activity* (healthy activity: at least 30 minutes 5 times/week; ACSM norms of heavy physical activity at least 3 times/week) *Psychological factors and social support* (distress; coping; kinesiophobia; social support) *General health* (vitality; perceived general health) Perceived quality of life	Perceived recovery (yes/no) Change in pain intensity Change in functional disability	<u>Higher perceived recovery at 3 months predicted by</u>: gender (male), shorter duration of knee complaints at baseline, less stiffness, menopause <u>Higher perceived recovery at 12 months predicted by</u>: no previous episodes of knee complaints, less pain <u>Higher change in pain intensity at 3 months predicted by</u>: gender (male), more intense pain at baseline, no overload during unusual activities as perceived cause, less distress, no coexisting musculoskeletal complaints, heavy physical exercise at least 3 times a week, overload during usual activities as perceived cause (p=0.06), <u>Higher change in pain intensity at 12 months predicted by</u>: no previous episodes of knee complaints, more pain at baseline, less pain coping distraction, less distress, higher vitality, injury during exercise as perceived cause (p=0.08) <u>Higher change in functional disability at 3 months predicted by</u>: age (younger), gender (male), worse functioning, no coexisting musculoskeletal complaints of upper and lower extremity, less pain coping reducing demands (p=0.06), heavy physical exercise at least 3 times a week (p=0.06), more social support (p=0.08) <u>Higher change in functional disability at 12 months predicted by</u>: younger age, gender (male), shorter duration of knee complaints, less stiffness, worse functioning, medium score on pain coping retreating, less distress
Van der Weide et al., 1999 (166) (Nether-lands ou Holland)	120 (3 months =110; 12 months=108)	Sick leave for LBP ≥ 10 days Pain below scapula and above gluteal fold Not pregnant Employees recruited at health services and referred to occupational physician No consultation with occupational physician for LBP in past 3 months	3, 12 months	Cox proportional hazard, multiple logistic regression	(Q, CD) *Socioemographic* (age; gender; smoking; sporting activity ≥ 1h/week) *LBP characteristics* (initial diagnosis – non-specific, suspicion of root compression; radiating pain – until knee, beyond knee; work related; duration of sick leave; history of LBP – sick leave during last year, sick leave more than once) Pain intensity Functional disability (RMDQ) *Psychosocial* (General health perception – lack of energy, sleep problems, emotional reactions, social isolation; Coping; Health locus of control; work	Time to RTW Functional disability	<u>Longer time to return to work predicted by</u>: intervention, radiating pain, high functional disability at baseline, problems in relation with colleagues, high work tempo and work quantity <u>High functional disability (3 months) predicted by</u>: high functional disability, high avoidance coping style <u>High functional disability (12 months) predicted</u>

					satisfaction) *Work characteristics* (job demands - mentally demanding, mixed mentally and physically demanding, physically demanding; work hours; present work experience (< 10 y); problems with work conditions: tempo & quantity, physical effort, emotional effort, lack of participation, lack of variation, lack of independence, problematic relation with supervisor/ colleagues)		<u>by</u>: lack of variation in work (work conditions), low emotional effort (work conditions), lack of energy (perceived health), social isolation (perceived health)
Van der Windt et al., 1996 (167) (Nether-lands)	335 (1 month: 321; 12 months: 302)	Patients consulting GP for new episode of shoulder complaint between April 1993 to April 1994 Not consulted for shoulder pain in last year 18 or more Shoulder complaints originating from shoulder joint <u>Exclusion</u>: No known neurological or vascular disorders, neoplasm, referred pain from internal organs, systemic rheumatic conditions, no fracture or luxation of shoulder joint.	1, 3, 6, 12 months	Logistic regression	(Q) *Sociodemographic* (age; gender) *Episode characteristics* (precipitating cause: injury, strain usual activities, strain unusual activities, unknown; duration of episode; diagnosis: capsular syndrome, bursitis, acromioclavicular syndrome, suacromial syndrome, unclear; concomitant neck pain; involvement in dominant side; history of shoulder complaint) Initial treatment at baseline (wait & see + medication, physio, injections) Pain intensity (day, night) Functional disability	Recovery (absence of shoulder complaints)	<u>Recovery at 1 months (N=311) predicted by</u>: precipitating cause of strain due to unusual activities, injection therapy <u>Persistence or recurrent complaints at 1 month predicted by</u>: diagnosis of chronic bursitis, long duration of symptoms, initial referral to physiotherapy <u>Recovery at 12 months (N=294) predicted by</u>: diagnosis of acute bursitis, slight trauma before shoulder pain <u>Persistence or recurrent complaints at 12 month predicted by</u>: concomitant neck pain, high pain intensity during day
Van der Windt et al., 2007 (168) (Nether-lands)	587 (517 at 3 months shoulder) 171 (164 at 3 months LBP)	1) Patient consulting GP for new episode of shoulder pain (01/2001-06/2003) Over 18 No shoulder consultation in previous 3 months 2) Patients consulting GP for LBP Duration less than 12 weeks or exacerbation of mild symptoms 18-65 Both cohort receiving usual care <u>Exclusion</u>: Shoulder patients: Fractures or dislocation, dementia, systemic disease (rheumatic disease, neoplasm, neurological or vascular disorders) LBP patients: specific conditions (metastasis, osteoporosis, rheumatoid	3 months	Logistic regression	(Q) *Psychological factors* (catastrophizing; distress; somatisation; fear-avoidance) *<u>Confounders</u>*: *Sociodemographic* (age; gender) *Episode characteristics* (duration; gradual onset; previous episodes; musculoskeletal pain elsewhere; pain intensity; functional limitations) *Shoulder patients* (gradual/acute onset; repetitive movement) *LBP patients* (radiation below knee) Treatment variables	Perceived recovery (persistent symptoms) Persistent functional disability	<u>For shoulder pain, no psychological variables predicted persistent symptoms</u>: duration X catastrophising : higher catastrophising for patient with longer duration predicted persistent symptoms. * adjusted for pain intensity & duration <u>For LBP, persistent symptoms predicted by</u>: higher catastrophising * adjusted for previous episodes of LBP For shoulder pain, no psychological variables predicted persistent functional disability after adjustment. For LBP, no psychological variables predicted persistent functional disability after adjustment.

		arthritis, fracture), current treatment by healthcare professional, pregnancy					
Von Korff et al., 1993 (169) (USA)	1213 (1128 at follow-up)	Consecutive primary care back pain patient (including thoracic and cervical pain) during 1989-1990 18-75	1 year	Logistic regression	(Q, MR, CD) *Sociodemographic* (age gender, education, race; employment status-part/full time, unemployed, retired, house keeping; compensation: past, current, never) *Pain grade* (pain intensity & pain disability) Pain persistence Disability days (last 6 months) Days in pain (last 6 months) Recency of onset (time since onset) Depression	Severity of back pain disability (*good outcome* = symptoms free or low pain/disability (grade 0-I); *fair outcome* = low disability-high pain intensity (grade II); *poor outcome* = high disability – moderately/ severely limiting pain(grade III-IV))	Poor outcome predicted by: High pain disability (pain grade) (moderate to severe limitation), days in pain in previous 6 months, gender (women), education (lower)
Williams et al., 1998 (170) (USA)	136 (82 at follow-up)	Consecutive men in military medical care system Persistent back pain on daily basis (T6 or below) for previous 8 ± 2 weeks Back pain is only pain problem (in good health otherwise) 18 to 50 Exclusion: No history of back pain or other persistent pain (daily basis) lasting 2 or more weeks no major medical illness, no medication affecting mood, no prior back surgery, no pain secondary to neoplastic disease, osteomyelitis, fractures	6 months	Hierarchical multiple regression	(Q) *Sociodemographic* (ethnicity) *Job satisfaction* (composite of: overall job satisfaction; satisfaction with job in general; satisfaction with work on job; satisfaction with supervision; satisfaction with coworkers) *Pain* (composite of: unpleasantness, intensity, current, typical) *Disability* (composite of: quality of well-being, physical impairment, psychosocial impairment, other impairment, Health status) *Distress (*composite of: Depression :Beck, Hamilton; Cognitions*:* automatic negative thoughts) Impairment at 6 months (Waddell)	Pain Disability Distress	Higher pain intensity (6 months) predicted by: higher pain intensity (baseline), poorer job satisfaction (baseline), more orthopaedic impairment (at 6 months) Higher disability (6 months) predicted by: higher disability (baseline), poorer job satisfaction (baseline), more orthopaedic impairment (at 6 months) Higher distress (6 months) predicted by: higher distress (baseline), ethnicity (minority), more orthopaedic impairment (at 6 months)

§ Compensation/computer database (CD), medical record (MR), questionnaire (Q), Interview (I), Physical/clinical examination (PE), rating scale (RS)
† NR = not reported. When only baseline N is given, this indicates the absence of attrition.

Appendice F : Formulaires de consentement

FORMULAIRE DE CONSENTEMENT ÉCLAIRÉ
pour la travailleuse ou pour le travailleur

Étude des prédicteurs de réinsertion professionnelle et du processus de réadaptation des travailleuses et des travailleurs accidentés

Ce projet de recherche est coordonné par François Laisné, étudiant au doctorat, sous la direction de Conrad Lecomte, professeur à l'Université de Montréal et Réginald Savard, professeur à l'Université de Sherbrooke.

Une copie de ce formulaire de consentement vous est remise.

Objectif de l'étude

Cette étude a comme objectif de mieux comprendre, à l'aide d'indicateurs psychosociaux, démographiques et biologiques, ce que vous vivez présentement suite à votre accident de travail. Nous désirons identifier et cerner vos préoccupations et vos besoins pour faire face à votre situation actuelle. Ainsi, nous aimerions avoir votre opinion pour éventuellement mieux répondre à vos besoins et améliorer la qualité des services qui vous sont offerts.

Description des procédures de l'étude et de votre rôle

Votre rôle dans cette étude consiste à participer à une entrevue et à des rencontres où l'on va vous demander de remplir des questionnaires. Par ces questions, on cherche à mieux comprendre ce que vous vivez suite à un accident de travail. Donc, avec une assistante ou un assistant de recherche, dans un premier temps, il y a trois rencontres d'environ 90 minutes chacune. Ensuite, après chacune des rencontres avec votre conseillère ou votre conseiller de la CSST, on va vous demander de remplir quelques questionnaires d'une durée d'environ 30 minutes. Ces questions visent à mieux comprendre ce qui se passe pour vous lorsque vous tentez de faire vos démarches de réadaptation avec l'aide d'une conseillère ou d'un conseiller de la CSST. De plus, nous allons vous demander de rencontrer l'assistant de recherche à 3 reprises afin de passer une brève entrevue visant aussi à mieux comprendre ce que vous vivez par rapport à votre accident et votre arrêt de travail. Afin de vous assurer que nous allons conserver exactement ce que vous allez partager avec nous, nous allons enregistrer ces 3 rencontres avec l'assistant(e) de recherche. À la fin des rencontres avec votre conseillère ou votre conseiller, une assistante ou un assistant de recherche va vous demander de remplir à nouveau les mêmes questionnaires qu'au début et passer la même entrevue pour comprendre ce que vous vivez comme travailleur accidenté. Pour tous ces questionnaires, nous vous remettrons des enveloppes pré-affranchies et pré-adressées afin que vous puissiez nous les retourner par la poste après chacune des rencontres avec votre conseillère ou votre conseiller.

De plus, afin de mieux comprendre votre situation, nous vous demandons l'autorisation d'avoir accès à certaines informations faisant partie de votre dossier n°________, à la CSST. Cette autorisation vise notamment l'accès aux renseignements suivant mais non limitativement :

- Date et siège des lésions antérieures, s'il y a lieu ;
- Nature et les circonstances de l'accident ;
- Date de l'événement ;
- Métier et expérience de travail ;
- Niveau de scolarité et diplôme ;
- Base salariale ;
- Diagnostics médicaux ;
- Types de professionnels consultés et services rendus ;
- Atteinte permanente et limitations fonctionnelles s'il y a lieu ;
- Médication ;
- Temps d'absence du travail et données sur le statut de travail ;
- Date de début et de fin de versement d'indemnisation de toute nature ;
- Date de consolidation de la lésion ;
- Contestations reliées à la réclamation ;
- Lieu(x) de travail avant la lésion (date d'entrée, type d'emploi, salaire et autres conditions de travail) ;
- Ancienneté dans l'entreprise où s'est produit l'événement ;
- Coûts du dossier ;
- Les mesures qui ont été prises pour favoriser la réadaptation ;
- L'évolution et les modalités de retour au travail (date, type d'emploi, salaire, l'entreprise et autres conditions de travail).

Respect de la confidentialité

Compte tenu de la nature des informations contenues dans vos réponses aux questionnaires ou provenant de votre dossier à la CSST, nous insistons sur le fait que tout le matériel que vous allez nous remettre est **strictement confidentiel et est traité de façon anonyme**, en accord avec les règles de déontologie les plus rigoureuses de la Société Canadienne de Psychologie et de l'Ordre des Psychologues du Québec. Ainsi, seuls les chercheurs de l'Université de Montréal et de l'Université de Sherbrooke y auront accès. De plus, afin d'assurer la confidentialité, un numéro est utilisé à la place de votre nom sur les questionnaires et les informations provenant de votre dossier. La liste maîtresse des noms et des codes est conservée dans un endroit sécuritaire et seul le coordonnateur de recherche (François Laisné) a accès aux noms correspondant aux codes. Une fois la recherche terminée, on vous assure que toutes les données brutes seront détruites.

Cessation de la participation

Le succès d'une telle recherche repose sur votre participation. Elle est donc très précieuse pour nous. Par ailleurs, votre participation à l'étude est volontaire et vous pouvez vous en retirer en tout temps ou refuser de participer. Votre décision d'y participer ou non, ou encore, de cesser d'y participer n'a aucun effet sur les services auxquels vous avez droit.

Avantages à participer

Cette étude a comme objectif de mieux comprendre ce que vous vivez présentement et de mieux identifier vos besoins pour éventuellement répondre d'une manière plus précise à vos besoins et d'améliorer les services qui vous sont offerts. De plus, la passation des questionnaires peut aussi vous permettre de mieux vous connaître et faire le point sur votre situation actuelle.

Risques

Ce projet ne comporte aucun risque connu. Le seul désagrément pourrait provenir de la durée de passation des questionnaires. Si vous le désirez, vous pouvez prendre des pauses pendant la passation des questionnaires ou la compléter à un autre moment que vous aurez convenu avec l'assistante ou l'assistant de recherche.

Vous pouvez en tout temps poser des questions à propos de cette étude, en contactant :

François Laisné, coordonnateur de la recherche
Université de Montréal
Faculté des arts et des sciences
Département de psychologie
Tel : (514) 343 6111 poste 4724

Si vous décidez de participer à cette étude, une copie de ce document vous est remise.

Consentement éclairé

Après avoir lu les informations précédentes et discuté avec l'assistant de recherche, je comprends la nature, les effets, les buts et les conditions de cette recherche et j'accepte librement d'y participer.

Nom et prénom de la travailleuse ou du travailleur	Signature

Ce formulaire de consentement a été préparé le 1er septembre 2000 par :

Conrad Lecomte, Ph.D.

Réginald Savard, Ph.D.

François Laisné, étudiant au doctorat

FORMULAIRE DE CONSENTEMENT ÉCLAIRÉ
pour la conseillère ou le conseiller en réadaptation

Étude des prédicteurs de réinsertion professionnelle et du processus de réadaptation des travailleuses et des travailleurs accidentés

Ce projet de recherche est coordonné par François Laisné, étudiant au doctorat, sous la direction de Conrad Lecomte, professeur à l'Université de Montréal) et Réginald Savard, professeur à l'Université de Sherbrooke.

Une copie de ce formulaire de consentement vous est remise.

Objectifs de l'étude

Nous sollicitons votre participation à une étude ayant pour objectif d'identifier les prédicteurs de la réinsertion professionnelle et de mieux comprendre les besoins de réadaptation des travailleuses et des travailleurs accidentés. Plus précisément, nous voulons connaître les éléments qui facilitent et qui rendent plus difficile la réinsertion professionnelle des travailleuses et des travailleurs accidentés sur le marché du travail. Nous voulons également mieux comprendre les éléments du processus de réadaptation qui en prédisent l'efficacité.

Description des procédures de l'étude et de votre rôle

Votre rôle dans cette étude consiste à répondre à des questionnaires pendant une durée d'environ 60 minutes au début et à la fin du processus de réadaptation avec la travailleuse ou le travailleur. Les questions portent sur des caractéristiques sociodémographiques et des variables reliées au travail. Aussi, nous vous demandons de remplir quelques questionnaires suite à chacune des rencontres avec la travailleuse ou le travailleur. Cette passation est d'une durée d'environ 30 minutes. Ces questionnaires portent sur le processus de réadaptation avec votre travailleur.

Cessation de la participation

Le succès d'une telle recherche repose sur votre participation. Elle est donc très précieuse pour nous. Cependant, votre participation à l'étude est volontaire et vous pouvez en tout temps vous retirer ou refuser de participer.

Avantages à participer
Vous pourrez obtenir des bénéfices directs de votre participation à cette étude. En effet, cette étude peut vous être utile afin de mieux connaître les enjeux et les besoins des travailleuses et des travailleurs accidentés en processus de réinsertion professionnelle. De plus, la passation des questionnaires peut vous permettre de faire le point sur le processus de réadaptation avec la travailleuse ou le travailleur.

Risques
Ce projet ne comporte aucun risque connu.

Respect de la confidentialité
Compte tenu de la nature des informations contenues dans vos réponses aux questionnaires, nous insistons sur le fait que tout le matériel que vous allez nous remettre est **strictement confidentiel et est traité de façon anonyme.** En accord avec les règles de déontologie les plus rigoureuses de la Société Canadienne de Psychologie et de l'Ordre des Psychologues du Québec, seuls les chercheurs de l'Université de Montréal et de l'Université de Sherbrooke y auront accès. De plus, afin d'assurer la confidentialité, un numéro est utilisé à la place de votre nom sur chacun des questionnaires. La liste maîtresse des noms et des codes est conservée dans un endroit sécuritaire et seul le coordonnateur de recherche (François Laisné) a accès aux noms correspondant aux codes. Une fois la recherche terminée, nous vous assurons que toutes les données brutes seront détruites.

Vous pouvez en tout temps obtenir des informations à propos de cette étude, en contactant :

François Laisné, coordonnateur de la recherche
Université de Montréal
Faculté des arts et des sciences
Département de psychologie
Tél. : (514) 343-6111 poste 4724

Si vous décidez de participer à cette étude, une copie de ce document vous est remise.

Consentement éclairé

Après avoir lu les informations précédentes, je comprends la nature, les effets, les buts et les conditions de cette recherche et j'accepte librement d'y participer.

______________________________ ______________________________

Nom et prénom de la conseillère ou du conseiller | Signature

Ce formulaire de consentement a été préparé le 1er septembre 2000 par :

____

Conrad Lecomte, Ph.D.

____

Réginald Savard, Ph.D.

____

François Laisné, étudiant

Appendice G : Instruments de mesure

Questionnaire 1 : Questionnaire sociodémographique

Questionnaire 2 : Multidimensional Pain Inventory

Questionnaire 4 : State-Trait Anxiety Inventory X form

Questionnaire 5 : University of Rhode Island Change Assessment Questionnaire (URICA)

Questionnaire 6 : Beck Depression Inventory-II

Questionnaire 7 : Brief Symptoms Inventory

Questionnaire 8 : Questionnaire d'implication dans le travail et dans l'emploi

Questionnaire 9 : Modified PTSD symptoms scale-self report

Année – Mois – Jour

Nom de la travailleuse ou du travailleur

Numéro de code

CONSIGNES GÉNÉRALES

Les questionnaires que vous vous apprêtez à remplir visent à nous permettre d'identifier et de cerner vos besoins et vos préoccupations afin de mieux comprendre ce que vous vivez dans votre situation actuelle.

Avant de répondre aux questionnaires, veuillez lire les consignes qui suivent :

1. Veuillez bien inscrire votre nom et la date au haut de cette feuille. Lorsque nous aurons reçu votre enveloppe, **cette feuille sera retirée et jetée**. Seul votre code apparaîtra sur les questionnaires.

2. Veuillez lire attentivement la consigne au début de chaque questionnaire et par la suite indiquez clairement vos réponses aux divers énoncés du questionnaire ;

3. Veuillez également porter attention à l'échelle à partir de laquelle vous aller répondre aux divers énoncés, celle-ci varie d'un questionnaire à l'autre ;

4. Tentez de répondre à toutes les questions ;

5. Comme il ne s'agit pas d'un test, il est important de vous rappeler qu'il n'y a pas de bonne ou de mauvaise réponse ;

6. Tentez de répondre spontanément en indiquant la première réponse à laquelle vous pensez, nous sommes intéressé à connaître vos premières impressions ;

Nous vous remercions de votre participation. Celle-ci est très précieuse pour nous et cette recherche ne pourrait pas se réaliser sans votre collaboration.

Code du(de la) travailleur(se) ☐☐☐☐☐☐

Date 2 0 0 ☐ - ☐☐ - ☐☐
Année Mois Jour

Questionnaire 1

1. Sexe: ☐ Masculin ☐ Féminin

2. Date de naissance: ..../......../........
Jour/Mois/Année

3. Nationalité: ____________________

4. Niveau de scolarité:
☐ Primaire ☐ Complété
☐ Secondaire ☐ Complété
☐ Collégial ☐ Complété
☐ Universitaire

5. Nombre d'années de scolarité complétées : ________

6. Statut civil:
☐ Marié(e) ou conjoint de fait
☐ Séparé(e) ou divorcé(e)
☐ Veuf(ve)
☐ Célibataire

7. Demeurez-vous actuellement avec un(e) conjoint(e)?

☐ oui Depuis combien de temps? Année(s) _____ Mois ____
☐ non

8. Demeurez-vous avec d'autres personnes qu'un(e) conjoint(e)?

☐ oui Veuillez spécifier le lien avec cette(ces) personne(s): ______________________
Depuis combien de temps? Année(s) _____ Mois _____
☐ non

9. Combien avez-vous d'enfants à votre charge ? _____

10. Quel âge a-t-il (ont-ils)? ____ ____ ____ ____

Code du(de la) travailleur(se) | | | | | | |

Date 2 0 0 _ - _ _ - _ _
Année Mois Jour

11. Votre revenu personnel annuel ou indemnité :

☐ Moins de $10 000
☐ $10 001-$20 000
☐ $20 001-$40 000
☐ $40 001-$60 000
☐ $60 001-$80 000
☐ $80 001-$100 000
☐ $100 001 et plus

12. Votre revenu familial annuel :

☐ Moins de $10 000
☐ $10 001-$20 000
☐ $20 001-$40 000
☐ $40 001-$60 000
☐ $60 001-$80 000
☐ $80 001-$100 000
☐ $100 001 et plus

13. Etes-vous le principal "gagne pain" de votre famille? ☐ Oui ☐ Non

14. Considérez-vous votre situation financière comme :

☐ Très difficile ☐ Difficile ☐ Juste suffisante ☐ Suffisante

15. Pouvez-vous compter sur quelqu'un en cas de difficultés financières? : ☐ Oui ☐ Non

Si oui, qui ? :
☐ La parenté
☐ Un de vos enfants
☐ Votre conjoint(e)
☐ Ami(e)s
☐ Autre(s), précisez : ____________________________

16. Quelle est la raison de votre arrêt de travail (nature de l'accident ou de la maladie) ? ....
....

17. Pensez-vous que vous serez capable de refaire le même emploi malgré les conséquences de l'accident ou de la maladie ?

Pas du tout d'accord			Moyennement d'accord			Tout à fait d'accord
1	2	3	4	5	6	7

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18. Depuis combien de temps êtes-vous en arrêt de travail ?

☐ De 0 à 3 mois ☐ De 10 à 12 mois
☐ De 4 à 6 mois ☐ De 13 à 24 mois
☐ De 7 à 9 mois ☐ Plus de 24 mois

19. Parmi les phrases suivantes, quelle est celle qui décrit le mieux votre cheminement sur le marché du travail ?

☐ Vous avez toujours (ou presque) travaillé.

☐ Vous avez occupé des emplois entrecoupés de périodes de chômage.

☐ Vous avez été surtout au chômage, mais vous avez eu des emplois de très courte durée.

☐ Vous avez interrompu votre activité pendant une longue durée (maladie, raison personnelle, etc.).

20. Comment voyez-vous la relation que vous aviez avec vos collègues de travail avant votre accident?

☐	☐	☐	☐	☐	☐	☐
Très mauvaise	Mauvaise	Plutôt mauvaise	Neutre	Plutôt bonne	Bonne	Très bonne

21. Comment voyez-vous la relation que vous aviez avec votre employeur avant votre accident?

☐	☐	☐	☐	☐	☐	☐
Très mauvaise	Mauvaise	Plutôt mauvaise	Neutre	Plutôt bonne	Bonne	Très bonne

22. Jusqu'à quel point sentez-vous que votre employeur pour lequel vous travailliez avant l'accident vous comprend et vous appuie dans votre démarche de réadaptation?

Mon employeur ne m'appuie pas du tout		Mon employeur m'appuie un peu		Mon employeur m'appuie beaucoup
1	2	3	4	5

23. Quel était votre degré de satisfaction par rapport à votre travail avant votre accident?

☐	☐	☐	☐	☐	☐	☐
Très insatisfait	Insatisfait	Plutôt insatisfait	Ambivalent	Plutôt satisfait	Satisfait	Très satisfait

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Questionnaire 2

Une partie importante de notre évaluation comporte l'examen de la douleur de votre point de vue parce que vous connaissez votre douleur mieux que n'importe qui. Nous aimerions en apprendre davantage sur votre douleur et la façon dont elle affecte votre vie. Sous chaque question se trouve une échelle de réponses. Lisez attentivement chaque question et encerclez le chiffre qui indique à quel point cela s'applique à vous.

section 1

1. Evaluez le niveau de votre douleur en ce moment.

0	1	2	3	4	5	6
Aucune douleur						Douleur très intense

2. En général, à quel point la douleur nuit-elle à vos activités quotidiennes ?

0	1	2	3	4	5	6
Ne nuit pas du tout						Nuit énormément

3. Depuis que vous avez commencé à ressentir de la douleur, jusqu'à quel point a-t-elle changé votre capacité de travailler ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

4. A quel point la douleur a-t-elle changé le niveau de satisfaction ou de plaisir que vous retirez de vos activités sociales ou de vos loisirs?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

5. Dans quelle mesure votre conjoint(e) vous soutient-il(elle) ou vous aide-t-il(elle) relativement à votre douleur ?

0	1	2	3	4	5	6
Aucun soutien						Très grand soutien

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6. Evaluez votre humeur globale pendant la semaine qui vient de s'écouler ?

0	1	2	3	4	5	6
Très mauvaise humeur						Très bonne humeur

7. Dans quelle mesure la douleur nuit-elle à votre sommeil ?

0	1	2	3	4	5	6
Ne nuit pas du tout						Nuit énormément

8. En général, quelle était l'intensité de votre douleur pendant la semaine qui vient de s'écouler ?

0	1	2	3	4	5	6
Aucunement intense						Extrêmement intense

9. A quel point pouvez-vous prédire le moment où votre douleur commencera, diminuera ou augmentera ?

0	1	2	3	4	5	6
Incapable de prédire						Très capable de prédire

10. A quel point la douleur a-t-elle changé votre capacité de participer à des activités sociales ou de loisir ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

11. Dans quelle mesure limitez-vous vos activités afin d'éviter que la douleur s'aggrave ?

0	1	2	3	4	5	6
Ne limite pas du tout						Limite énormément

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12. A quel point votre douleur a-t-elle changé le niveau de satisfaction ou de plaisir que vous retirez des activités familiales ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

13. Dans quelle mesure votre conjoint(e) s'inquiète-t-il(elle) de vous à cause de votre douleur ?

0	1	2	3	4	5	6
Ne s'inquiète pas du tout						S'inquiète énormément

14. Pendant la semaine qui vient de s'écouler, avez-vous l'impression d'avoir eu la maîtrise de ce qui s'est passé dans votre vie et jusqu'à quel point ?

0	1	2	3	4	5	6
Aucune maîtrise						Excellente maîtrise

15. Au cours d'une journée, à quel point votre douleur varie-t-elle (augmente ou diminue) ?

0	1	2	3	4	5	6
Ne varie pas du tout						Varie énormément

16. Quel est le degré de souffrance que vous ressentez à cause de votre douleur ?

0	1	2	3	4	5	6
Aucune souffrance						Enormément de souffrance

17. A quelle fréquence pouvez-vous faire quelque chose qui aide à diminuer la douleur ?

0	1	2	3	4	5	6
Jamais						Très souvent

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18. A quel point votre douleur a-t-elle changé vos relations avec votre conjoint(e) ou votre famille ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

19. Dans quelle mesure la douleur a-t-elle changé le niveau de satisfaction ou de plaisir que vous procure votre travail ?
(__) cochez ici si vous ne travaillez pas actuellement.

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

20. A quel point votre conjoint(e) vous donne-t-il(elle) de l'attention à cause de votre douleur ?

0	1	2	3	4	5	6
N'est pas attentif(ve)						Extrêmement attentif(ve)

21. Pendant la semaine qui vient de s'écouler, dans quelle mesure avez-vous l'impression d'avoir pu faire face à vos problèmes ?

0	1	2	3	4	5	6
Pas du tout						Enormément

22. A quel point croyez-vous maîtriser votre douleur ?

0	1	2	3	4	5	6
Aucune maîtrise						Grande maîtrise

23. A quel point la douleur a-t-elle changé votre capacité d'accomplir les tâches domestiques ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

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24. Pendant la semaine qui vient de s'écouler, à quel point avez-vous réussi à faire face aux situations stressantes dans votre vie ?

0	1	2	3	4	5	6
Pas du tout réussi						Extrêmement bien réussi

25. Dans quelle mesure la douleur vous a-t-elle empêchée de planifier des activités ?

0	1	2	3	4	5	6
Pas du tout empêchée						Beaucoup empêchée

26. Pendant la semaine qui vient de s'écouler, à quel point avez-vous été irritable ?

0	1	2	3	4	5	6
Pas du tout irritable						Extrêmement irritable

27. Dans quelle mesure la douleur a-t-elle changé vos relations amicales avec les gens autres que votre famille ?

0	1	2	3	4	5	6
Aucun changement						Enormément de changement

28. Pendant la semaine qui vient de s'écouler, à quel point vous avez été tendu(e) ou anxieux(se) ?

0	1	2	3	4	5	6
Pas du tout tendu(e) ou anxieuse						Extrêmement tendu(e) ou anxieux(se)

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Section 2

Dans la section qui suit, nous désirons savoir comment votre conjoint(e) ou la personne qui vous est la plus significative agit envers vous lorsqu'il(elle) sait que vous avez mal. Veuillez encercler le chiffre sur l'échelle ci-dessous correspondant à la fréquence selon laquelle cette personne réagit de la façon décrite, lorsque vous avez mal.

0	1	2	3	4	5	6
Jamais						**Très souvent**

1. Il (elle) m'ignore.	0	1	2	3	4	5	6
2. Il (elle) me demande ce qu'il (elle) peut faire pour m'aider.	0	1	2	3	4	5	6
3. Il (elle) me fait la lecture.	0	1	2	3	4	5	6
4. Il (elle) perd patience avec moi.	0	1	2	3	4	5	6
5. Il (elle) se charge de mes tâches ou de mes responsabilités.	0	1	2	3	4	5	6
6. Il (elle) me parle d'autre chose pour me distraire de ma douleur.	0	1	2	3	4	5	6
7. Il (elle) est contrarié(e) à cause de moi.	0	1	2	3	4	5	6
8. Il (elle) essaie de me convaincre de me reposer.	0	1	2	3	4	5	6
9. Il (elle) essaie de me faire participer à une activité quelconque.	0	1	2	3	4	5	6
10. Il (elle) se fâche contre moi.	0	1	2	3	4	5	6
11. Il (elle) me procure des médicaments contre la douleur.	0	1	2	3	4	5	6
12. Il (elle) m'encourage à me consacrer à un passe-temps.	0	1	2	3	4	5	6
13. Il (elle) va me chercher quelque chose à boire ou à manger.	0	1	2	3	4	5	6
14. Il (elle) m'allume le téléviseur pour me faire oublier ma douleur.	0	1	2	3	4	5	6

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Section 3

Voici une liste de vingt (20) activités quotidiennes. Veuillez indiquer la fréquence à laquelle vous faites chacune de ces activités en encerclant le chiffre correspondant sur l'échelle.

0	1	2	3	4	5	6
Jamais						**Très souvent**

1. Laver la vaisselle.	0	1	2	3	4	5	6
2. Tondre la gazon. (__) cochez ici si vous n'avez pas de gazon à tondre.	0	1	2	3	4	5	6
3. Manger au restaurant.	0	1	2	3	4	5	6
4. Jouer aux cartes ou d'autres jeux.	0	1	2	3	4	5	6
5. Faire le marché.	0	1	2	3	4	5	6
6. Jardiner. (__) cochez ici si vous n'avez pas de jardin.	0	1	2	3	4	5	6
7. Aller au cinéma.	0	1	2	3	4	5	6
8. Aller chez des ami(e)s	0	1	2	3	4	5	6
9. Aider à faire le ménage.	0	1	2	3	4	5	6
10. Effectuer des travaux d'entretien de la voiture. (__) cocher ici si vous n'avez pas de voiture.	0	1	2	3	4	5	6
11. Se promener en voiture ou en autobus.	0	1	2	3	4	5	6
12. Rendre visite à des proches (parenté) (__) cocher ici si vous n'avez pas de famille dans un rayon de 160 Km.	0	1	2	3	4	5	6
13. Préparer un repas.	0	1	2	3	4	5	6
14. Laver la voiture. (__) cocher ici si vous n'avez pas de voiture.	0	1	2	3	4	5	6
15. Voyager.	0	1	2	3	4	5	6

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0	1	2	3	4	5	6
Jamais						**Très souvent**

16. Aller dans un parc ou à la plage	0	1	2	3	4	5	6
17. Faire le lavage.	0	1	2	3	4	5	6
18. Effectuer une réparation nécessaire dans la maison.	0	1	2	3	4	5	6
19. Avoir des rapports sexuels.	0	1	2	3	4	5	6
20. Pelleter la neige.	0	1	2	3	4	5	6

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Questionnaire 4

La première partie de ce questionnaire contient plusieurs énoncés que les gens ont l'habitude d'utiliser pour se décrire. Lisez chaque énoncé, puis encerclez le chiffre approprié pour indiquer comment vous vous sentez à ce moment précis.

Pas du tout	Un peu	Modérément	Beaucoup
1	2	3	4

1ère partie : En ce moment précis...

1- Je me sens calme.	1	2	3	4
2- Je me sens en sécurité.	1	2	3	4
3- Je suis tendu(e).	1	2	3	4
4- Je suis triste.	1	2	3	4
5- Je me sens tranquille.	1	2	3	4
6- Je me sens bouleversé(e).	1	2	3	4
7- Je suis préoccupé(e) actuellement par ce qui pourrait m'arriver.	1	2	3	4
8- Je me sens reposé(e).	1	2	3	4
9- Je me sens anxieux(se).	1	2	3	4
10- Je me sens à l'aise.	1	2	3	4
11- Je me sens sûr(e) de moi.	1	2	3	4
12- Je me sens nerveux(se).	1	2	3	4
13- Je suis affolé(e).	1	2	3	4
14- Je me sens sur le point d'éclater.	1	2	3	4
15- Je suis relaxé(e).	1	2	3	4
16- Je me sens heureux(se).	1	2	3	4

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Pas du tout	Un peu	Modérément	Beaucoup
1	2	3	4

1ère partie (suite) : En ce moment précis...

17- Je suis préoccupé(e).	1	2	3	4
18- Je me sens surexcité(e).	1	2	3	4
19- Je me sens joyeux(se).	1	2	3	4
20- Je me sens bien.	1	2	3	4

Deuxième partie

La deuxième partie de ce questionnaire contient aussi plusieurs énoncés que les gens ont l'habitude d'utiliser pour se décrire. Lisez chaque énoncé, puis encerclez le chiffre approprié pour indiquer comment vous vous sentez en général.

Pas du tout	Un peu	Modérément	Beaucoup
1	2	3	4

2ème partie : En générale...

21- Je me sens calme.	1	2	3	4
22- Je me fatigue rapidement.	1	2	3	4
23- Je me sens au bord des larmes.	1	2	3	4
24- Je souhaiterais être aussi heureux(se) que les autres semblent l'être.	1	2	3	4
25- Je perds de belles occasions parce que je n'arrive pas à me décider assez rapidement.	1	2	3	4
26- Je me sens reposé(e).	1	2	3	4
27- Je suis calme, tranquille et en paix.	1	2	3	4
28- Je sens que les difficultés s'accumulent au point que je ne peux pas en venir à bout.	1	2	3	4

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Pas du tout	Un peu	Modérément	Beaucoup
1	2	3	4

<u>2ème partie (suite) :</u> En générale...

29- Je m'en fais trop pour des choses qui n'en valent pas vraiment la peine.	1	2	3	4
30- Je suis heureux(se).	1	2	3	4
31- Je suis porté(e) à prendre mal les choses.	1	2	3	4
32- Je manque de confiance en moi.	1	2	3	4
33- Je me sens en sécurité.	1	2	3	4
34- J'essaie d'éviter de faire face à une crise ou à une difficulté.	1	2	3	4
35- Je me sens mélancolique.	1	2	3	4
36- Je suis content(e).	1	2	3	4
37- Des idées sans importance me passent par la tête et me tracassent.	1	2	3	4
38- Je prends les désappointements tellement à coeur que je n'arrive pas à me les sortir de la tête.	1	2	3	4
39- Je suis une personne stable.	1	2	3	4
40- Je deviens tendu(e) et bouleversé(e) quand je songe à mes préoccupations actuelles.	1	2	3	4

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Questionnaire 5

Voici un questionnaire portant sur la façon dont vous percevez les situations ou problèmes qui vous amènent à rencontrer un(e) conseiller(ère) à la CSST. En utilisant l'échelle ci-dessous, veuillez répondre à chaque énoncé en encerclant le chiffre qui corrrepond à votre situation.

Fortement en désacccord	Moyennement en désacccord	Neutre ou indécis	Moyennement en acccord	Fortement en acccord
1	2	3	4	5

1- D'après moi, je n'ai aucune difficulté qui nécessite un changement.	1	2	3	4	5
2- Je pense que je suis prêt(e) à faire quelque chose pour m'améliorer.	1	2	3	4	5
3- Je fais quelque chose au sujet des problèmes qui me dérangeaient.	1	2	3	4	5
4- Ça vaudrait la peine de travailler sur mon problème.	1	2	3	4	5
5- Ce n'est pas moi qui ai un problème; ça n'a pas de sens pour moi de rencontrer un(e) conseiller(ère) pour discuter de ma situation.	1	2	3	4	5
6- Ça m'inquiète de savoir que le problème que j'avais réglé pourrait revenir, alors je vais rencontrer un(e) conseiller(ère) pour chercher de l'aide.	1	2	3	4	5
7- Je travaille enfin sur mes problèmes.	1	2	3	4	5
8- J'ai pensé changer quelque chose à propos de moi-même.	1	2	3	4	5
9- J'ai réussi à travailler sur mon problème, mais je ne suis pas certain de pouvoir continuer à mettre les efforts par moi-même.	1	2	3	4	5
10- Parfois mon problème est difficile, mais je travaille dessus.	1	2	3	4	5
11- C'est plutôt une perte de temps pour moi de rencontrer un(e) conseiller(ère) car le problème n'a rien avoir avec moi.	1	2	3	4	5
12- J'espère que mes rencontres avec un(e) conseiller(ère) vont m'aider à mieux me comprendre.	1	2	3	4	5
13- Je suppose que j'ai des défauts, mais il n'y a rien que j'ai vraiment besoin de changer.	1	2	3	4	5
14- Je travaille vraiment fort pour changer.	1	2	3	4	5
15- J'ai un problème et je pense vraiment que je devrais travailler dessus.	1	2	3	4	5

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Fortement en désacccord	Moyennement en désacccord	Neutre ou indécis	Moyennement en acccord	Fortement en acccord
1	2	3	4	5

16- Je n'ai pas persévéré aussi bien que je l'avais espéré dans les changements que j'ai fait, alors je rencontre un(e) conseiller(ère) pour éviter que mon problème revienne.	1	2	3	4	5
17- Même si je ne réussis pas toujours à changer avec succès, au moins je travaille sur mon problème.	1	2	3	4	5
18- Je pensais qu'une fois que j'aurais réglé mon problème j'en serais débarassé, mais parfois il m'arrive encore de me retrouver pris avec le même problème.	1	2	3	4	5
19- J'aimerais avoir plus d'idées sur la façon de régler mon problème.	1	2	3	4	5
20- J'ai commencé à travailler sur mes problèmes, mais j'aimerais avoir de l'aide.	1	2	3	4	5
21- Peut-être que mes rencontres avec un(e) conseiller(ère) vont pouvoir m'aider.	1	2	3	4	5
22- J'aurais besoin d'un coup de main en ce moment pour m'aider à maintenir les changements que j'ai déjà fait.	1	2	3	4	5
23- J'ai peut-être une part de responsabilité dans le problème, mais je ne le pense pas vraiment.	1	2	3	4	5
24- J'espère qu'un(e) conseiller(ère) va pouvoir me donner de bons conseils.	1	2	3	4	5
25- N'importe qui peut parler de changer; moi je fais vraiment quelque chose à ce sujet.	1	2	3	4	5
26- C'est ennuyant ces discussions à propos de ce que je vis. Pourquoi les gens ne peuvent-ils pas juste oublier leurs problèmes.	1	2	3	4	5
27- Je rencontre un(e) conseiller(ère) pour éviter que mon problème revienne.	1	2	3	4	5
28- C'est frustrant, j'ai l'impression que mon problème pourrait revenir même si je croyais l'avoir réglé.	1	2	3	4	5
29- J'ai des soucis comme tout le monde. Pourquoi perdre du temps à y penser?	1	2	3	4	5
30- Je travaille activement sur mon problème.	1	2	3	4	5
31- Je préférerais m'accomoder de mes défauts plutôt que d'essayer de les changer.	1	2	3	4	5
32- Après tout ce que j'ai fait pour essayer de changer mon problème, ça revient encore parfois m'obséder.	1	2	3	4	5

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Questionnaire 6

Ce questionnaire comporte 21 groupes d'énoncés. Veuillez lire avec soin chacun de ces groupes puis, dans chaque groupe, choisissez l'énoncé qui décrit le mieux comment vous vous êtes senti(e) au cours des deux dernières semaines, incluant aujourd'hui. Encerclez alors **le chiffre qui correspond le mieux** à ce que vous ressentez. Assurez-vous bien de ne choisir qu'un seul énoncé dans chaque groupe.

1 **Tristesse**
0 Je ne me sens pas triste.
1 Je me sens très souvent triste.
2 Je suis tout le temps triste.
3 Je suis si triste ou si malheureux(se), que ce n'est pas supportable.

2 **Pessimisme**
0 Je ne suis pas découragé(e) face à mon avenir.
1 Je me sens plus découragé(e) qu'avant face à mon avenir.
2 Je ne m'attends pas à ce que les choses s'arrangent pour moi.
3 J'ai le sentiment que mon avenir est sans espoir et qu'il ne peut qu'empirer.

3 **Échecs dans le passé**
0 Je n'ai pas le sentiment d'avoir échoué dans la vie, d'être un(e) raté(e).
1 J'ai échoué plus souvent que je n'aurais dû.
2 Quand je pense à mon passé, je constate un grand nombre d'échecs.
3 J'ai le sentiment d'avoir complètement raté ma vie.

4 **Perte de plaisir**
0 J'éprouve toujours autant de plaisir qu'avant pour les choses qui me plaisent.
1 Je n'éprouve pas autant de plaisir qu'auparavant pour les choses qui me plaisent.
2 J'éprouve très peu de plaisir pour les choses qui me plaisent habituellement.
3 Je n'éprouve aucun plaisir pour les choses qui me plaisent habituellement.

5 **Sentiment de culpabilité**
0 Je ne me sens pas particulièrement coupable.
1 Je me sens coupable pour bien des choses que j'ai faites ou que j'aurais dû faire.
2 Je me sens coupable la plupart du temps.
3 Je me sens tout le temps coupable.

6 **Sentiment d'être puni(e)**
0 Je n'ai pas le sentiment d'être puni(e).
1 Je sens que je pourrais être puni(e).
2 Je m'attends à être puni(e).
3 J'ai le sentiment d'être puni(e).

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7 **Sentiments négatifs envers soi-même**
- 0 Mes sentiments envers moi-même n'ont pas changé.
- 1 J'ai perdu confiance en moi.
- 2 Je suis déçu(e) de moi.
- 3 Je ne m'aime pas du tout

8 **Attitude critique envers soi**
- 0 Je ne me blâme pas ou ne me critique pas plus que d'habitude.
- 1 Je suis plus critique envers moi-même que je ne l'étais.
- 2 Je me reproche tous mes défauts.
- 3 Je me reproche tous les malheurs qui arrivent.

9 **Pensées ou désirs de suicide**
- 0 Je ne pense pas du tout à me suicider.
- 1 Il m'arrive de penser à me suicider, mais je ne le ferai pas.
- 2 J'aimerais me suicider.
- 3 Je me suiciderais si l'occasion se présentait.

10 **Pleurs**
- 0 Je ne pleure pas plus qu'avant.
- 1 Je pleure plus qu'avant.
- 2 Je pleure pour la moindre petite chose.
- 3 Je voudrais pleurer, mais je n'en suis pas capable.

11 **Agitation**
- 0 Je ne suis pas plus agité(e) ou plus tendu(e) que d'habitude.
- 1 Je me sens plus agité(e) ou plus tendu(e) que d'habitude.
- 2 Je suis si agité(e) ou si tendu(e) que j'ai du mal à rester tranquille.
- 3 Je suis si agité(e) ou si tendu(e) que je dois continuellement bouger ou faire quelque chose.

12 **Perte d'intérêt**
- 0 Je n'ai pas perdu d'intérêt pour les gens ou pour les activités.
- 1 Je m'intéresse moins qu'avant aux gens et aux choses.
- 2 Je ne m'intéresse presque plus aux gens et aux choses.
- 3 J'ai du mal à m'intéresser à quoi que ce soit.

13 **Indécision**
- 0 Je prends des décisions toujours aussi bien qu'avant.
- 1 Il m'est plus difficile que d'habitude de prendre des décisions.
- 2 J'ai beaucoup plus de mal qu'avant à prendre des décisions.
- 3 J'ai du mal à prendre n'importe quelle décision.

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14 **Dévalorisation**

0 Je pense être quelqu'un de valable.
1 Je ne crois pas avoir autant de valeur ni être aussi utile qu'avant.
2 Je me sens moins valable que les autres.
3 Je sens que je ne vaux absolument rien.

15 **Perte d'énergie**

0 J'ai toujours autant d'énergie qu'avant.
1 J'ai moins d'énergie qu'avant.
2 Je n'ai pas assez d'énergie pour pouvoir faire grand-chose.
3 J'ai trop peu d'énergie pour faire quoi que ce soit.

16 **Modifications dans les habitudes de sommeil**

0 Mes habitudes de sommeil n'ont pas changé.

1a Je dors un peu plus que d'habitude.
1b Je dors un peu moins que d'habitude.

2a Je dors beaucoup plus que d'habitude.
2b Je dors beaucoup moins que d'habitude.

3a Je dors presque toute la journée.
3b Je me réveille une ou deux heures plus tôt que d'habitude et je suis incapable de me rendormir.

17 **Irritabilité**

0 Je ne suis pas plus irritable que d'habitude.
1 Je suis plus irritable que d'habitude.
2 Je suis beaucoup plus irritable que d'habitude.
3 Je suis constamment irritable.

18 **Modifications de l'appétit**

0 Mon appétit n'a pas changé.

1a J'ai un peu moins d'appétit que d'habitude.
1b J'ai un peu plus d'appétit que d'habitude.

2a J'ai beaucoup moins d'appétit que d'habitude.
2b J'ai beaucoup plus d'appétit que d'habitude.

3a Je n'ai pas d'appétit du tout.
3b J'ai constamment envie de manger.

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19 **Difficulté à se concentrer**

0 Je parviens à me concentrer toujours aussi bien qu'avant.
1 Je ne parviens pas à me concentrer aussi bien que d'habitude.
2 J'ai du mal à me concentrer longtemps sur quoi que ce soit.
3 Je me trouve incapable de me concentrer sur quoi que ce soit.

20 **Fatigue**

0 Je ne suis pas plus fatigué(e) que d'habitude.
1 Je me fatigue plus facilement que d'habitude.
2 Je suis trop fatigué(e) pour faire un grand nombre de choses que je faisais auparavant.
3 Je suis trop fatigué(e) pour faire la plupart des choses que je faisais auparavant.

21 **Perte d'intérêt pour le sexe**

0 Je n'ai pas noté de changement récent dans mon intérêt pour le sexe.
1 Le sexe m'intéresse moins qu'avant.
2 Le sexe m'intéresse beaucoup moins maintenant.
3 J'ai perdu tout intérêt pour le sexe.

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Questionnaire 7

Voici une liste de problèmes dont se plaignent parfois les gens. Lisez attentivement chaque phrase et encerclez le chiffre qui décrit le mieux À QUEL POINT CE PROBLÈME VOUS A TROUBLÉ(E) AU COURS DES SEPT (7) DERNIERS JOURS Y COMPRIS AUJOURD'HUI.

Pas du tout	Un peu	Modérément	Beaucoup	Extrêmement
0	1	2	3	4

1- Nervosité ou impression de tremblements intérieurs.	0	1	2	3	4
2- Faiblesses ou étourdissements.	0	1	2	3	4
3- L'idée que quelqu'un d'autre puisse contrôler vos pensées.	0	1	2	3	4
4- L'impression que ce sont les autres qui sont responsables de la plupart de vos problèmes.	0	1	2	3	4
5- Troubles de mémoire.	0	1	2	3	4
6- Tendance à vous sentir facilement agacé(e) ou contrarié(e).	0	1	2	3	4
7- Douleurs au coeur ou à la poitrine.	0	1	2	3	4
8- Peur des grands espaces et dans les rues.	0	1	2	3	4
9- Idées d'en finir avec la vie.	0	1	2	3	4
10- Sentiment que vous ne pouvez pas faire confiance à la plupart des gens.	0	1	2	3	4
11- Manquer d'appétit.	0	1	2	3	4
12- Tendance à vous effrayer sans raison.	0	1	2	3	4
13- Crises de colère incontrôlables.	0	1	2	3	4
14- Sentiment de solitude même en compagnie d'autrui.	0	1	2	3	4
15- Sentiment d'être bloqué(e) pour compléter des tâches.	0	1	2	3	4
16- Sentiment de solitude.	0	1	2	3	4
17- Avoir le cafard.	0	1	2	3	4

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Pas du tout	Un peu	Modérément	Beaucoup	Extrêmement
0	1	2	3	4

18- Manque d'intérêt pour tout.	0	1	2	3	4
19- Attitude craintive.	0	1	2	3	4
20- Tendance à vous sentir facilement blessé(e).	0	1	2	3	4
21- Sentiment que les gens ne sont pas amicaux ou qu'ils ne vous aiment pas.	0	1	2	3	4
22- Sentiment d'infériorité vis-à-vis des autres.	0	1	2	3	4
23- Nausées ou maux d'estomac.	0	1	2	3	4
24- Sentiment qu'on vous observe ou qu'on parle de vous.	0	1	2	3	4
25- Difficulté à vous endormir.	0	1	2	3	4
26- Besoin de vérifier et de revérifier ce que vous faites.	0	1	2	3	4
27- Difficulté à prendre des décisions.	0	1	2	3	4
28- Crainte de voyager en autobus, en métro ou en train.	0	1	2	3	4
29- Difficulté à reprendre votre souffle.	0	1	2	3	4
30- Bouffées de chaleur ou frissons.	0	1	2	3	4
31- Besoin d'éviter certains endroits, choses ou activités parce qu'ils vous font peur.	0	1	2	3	4
32- Trous de mémoire.	0	1	2	3	4
33- Engourdissements ou picotements dans certaines parties du corps.	0	1	2	3	4
34- L'idée que vous devriez être puni(e) pour vos péchés.	0	1	2	3	4
35- Vous sentir sans espoir face à l'avenir.	0	1	2	3	4
36- Difficulté à vous concentrer.	0	1	2	3	4
37- Sentiment de faiblesse dans certaines parties du corps.	0	1	2	3	4
38- Sentiment de tension ou de surexcitation.	0	1	2	3	4
39- Pensées sur la mort ou le fait de mourir.	0	1	2	3	4
40- Avoir envie de frapper, de blesser ou de faire du mal à quelqu'un.	0	1	2	3	4

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Pas du tout	Un peu	Modérément	Beaucoup	Extrêmement
0	1	2	3	4

41- Avoir envie de briser ou de fracasser des objets.	0	1	2	3	4
42- Fort sentiment d'embarras face aux autres.	0	1	2	3	4
43- Sentiment de malaise dans la foule.	0	1	2	3	4
44- Ne jamais vous sentir proche de quelqu'un.	0	1	2	3	4
45- Accès de terreur ou de panique.	0	1	2	3	4
46- Vous laisser facilement entraîner dans des discussions.	0	1	2	3	4
47- Sentiment de nervosité quand on vous laisse seul(e).	0	1	2	3	4
48- Ne pas être reconnu(e) à votre juste valeur.	0	1	2	3	4
49- Vous sentir tellement agité(e) que vous ne pouvez rester en place.	0	1	2	3	4
50- Sentiment que vous ne valez rien.	0	1	2	3	4
51- Sentiment que les gens vont profiter de vous si vous les laissez faire.	0	1	2	3	4
52- Sentiment de culpabilité.	0	1	2	3	4
53- L'idée que quelque chose ne va pas dans votre tête.	0	1	2	3	4

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Questionnaire 9

À propos de votre situation actuelle, les affirmations qui suivent pourraient-elles être les vôtres ? Pour chaque phrase, choisissez la réponse qui vous convient en encerclant sur l'échelle graduée le chiffre correspondant.

Non	Plutôt non	Plutôt oui	Oui
1	2	3	4

1- Dans la vie, la plupart des choses sont plus importantes que le travail.	1	2	3	4
2- Mes projets d'avenir concernent essentiellement mon travail.	1	2	3	4
3- Pour moi, le travail ne représente qu'une partie de ce que je suis.	1	2	3	4
4- Lorsque je rencontre, chez mes amis, quelqu'un que je ne connais pas, il est presque certain que je lui parlerai de mon travail, même s'il ne me le demande pas.	1	2	3	4
5- Mon travail, c'est ma vie.	1	2	3	4
6- J'ai d'autres activités plus importantes que mon travail.	1	2	3	4
7- Lorsque je suis en vacances, il m'arrive souvent de penser que mon travail me manque.	1	2	3	4
8- Ce qui m'arrive de plus important est en rapport avec mon travail.	1	2	3	4
9- Je pense beaucoup moins souvent à mon travail qu'à d'autres centres d'intérêts.	1	2	3	4
10- Lorsqu'un membre de ma famille me demande de mes nouvelles, je pense immédiatement à mon travail.	1	2	3	4
11- Il m'arrive souvent de penser à mon travail lorsque je n'y suis pas.	1	2	3	4
12- Je suis content de revenir au travail.	1	2	3	4

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Questionnaire 13

Suite à(aux) l'événement(s) entourant votre accident de travail, veuillez indiquer la fréquence et l'intensité de vos réactions depuis les 2 dernières semaines. En utilisant l'échelle ci-dessous, veuillez indiquer la fréquence des réactions à la gauche de chaque énoncé. Ensuite, indiquez à la droite de chaque énoncé l'intensité de chaque réaction en encerclant la lettre qui vous correspond le mieux.

Fréquence :

0 pas du tout (jamais)

1 une fois par semaine ou moins / un peu / de temps en temps

2 2 à 4 fois par semaine / assez / la moitié du temps

3 5 fois ou plus par semaine / beaucoup / presque toujours

Sévérité :

A pas du tout bouleversant

B un peu bouleversant

C modérément bouleversant

D plutôt bouleversant

E extrêmement bouleversant

____ 1. Avez-vous eu des pensées ou souvenirs bouleversants répétitifs ou envahissants à propos de(s) événement(s)?.. A B C D E

____ 2. Avez-vous fait des mauvais rêves ou des cauchemars de façon répétitive au sujet de(s) événement(s)?.. A B C D E

____ 3. Vous est-il arrivé de revivre soudainement le ou les événement(s), d'avoir des flash-back de celui-ci, ou de vous sentir ou comporter comme si l'événement se reproduisait ?.. A B C D E

____ 4. Avez-vous été intensément bouleversé(e)en vous rappelant le(s) événement(s) (incluant vos réactions lors de l'anniversaire de(s) l'événement(s))?.. A B C D E

____ 5. Avez-vous fait des efforts persistants pour éviter des pensées ou sentiments associés à (aux) événement(s).. A B C D E

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Date

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Fréquence :

0 pas du tout
1 une fois par semaine ou moins / un peu / parfois
2 2 à 4 fois par semaine / assez / la moitié du temps
3 5 fois ou plus par semaine / beaucoup / presque toujours

Sévérité :

A pas du tout bouleversant
B un peu bouleversant
C modérément bouleversant
D plutôt bouleversant
E extrêmement bouleversant

____	6.	Avez-vous fait des efforts persistants pour éviter des activités, des situations ou des lieux qui vous rappellent le(s) événement(s) ? ………...................	A	B	C	D	E
____	7.	Y a-t-il des aspects importants de cet (ces) événement(s) dont vous n'arrivez toujours pas à vous souvenir ?…......…………………………….....	A	B	C	D	E
____	8.	Avez-vous perdu intérêt de façon prononcée dans vos activités de loisir depuis le(s) événement(s) ?...	A	B	C	D	E
____	9.	Vous sentez-vous isolé(e) ou détaché(e) des autres autour de vous depuis le(s) événement(s) ?............	A	B	C	D	E
____	10.	Avez-vous l'impression que votre capacité à ressentir vos émotions est diminuée (ex : incapable d'avoir des sentiments amoureux, vous n'arrivez pas à pleurer lorsque vous êtes triste, etc.) ?..................	A	B	C	D	E
____	11.	Avez-vous le sentiment que des projets futurs ou des désirs ont changés à cause de(s) événement(s) (ex: faire carrière, se marier, avoir des enfants, avoir un cours normal de la vie)?	A	B	C	D	E
____	12.	Avez-vous une difficulté persistante à vous endormir ou rester endormi depuis le(s) événement(s)?...…...	A	B	C	D	E
____	13.	Êtes-vous continuellement irritable ou avez eu des explosions de colère depuis le(s) événement(s)?.................……...........……..........	A	B	C	D	E

Code du(de la) travailleur(se)

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Fréquence :

0 pas du tout
1 une fois par semaine ou moins / un peu / parfois
2 2 à 4 fois par semaine / assez / la moitié du temps
3 5 fois ou plus par semaine / beaucoup / presque toujours

Sévérité :

A pas du tout bouleversant
B un peu bouleversant
C modérément bouleversant
D plutôt bouleversant
E extrêmement bouleversant

____	14.	Avez-vous de la difficulté à vous concentrer de manière persistante?...................................	A	B	C	D	E
____	15.	Êtes-vous excessivement vigilant (ex : vérifier ce qui est autour de vous, etc.) depuis l'événement?....	A	B	C	D	E
____	16.	Êtes-vous plus nerveux ou sursautez-vous plus facilement depuis le(s) événement(s) ?................	A	B	C	D	E
____	17.	Avez-vous eu des réactions PHYSIQUES intenses (ex : transpiration, palpitations cardiaques) lorsque vous vous rappellez le(s) événement(s) ?................	A	B	C	D	E